NATIONAL PETROLEUM NEWS

Quick Action on Code by Trade Body Sought by Petroleum Institute

CLEVELAND, Dec. 18

THE code of marketing practices of the American Petroleum Institute now rests before the Federal Trade Commission.

An effort is being made by the institute to have the trade body hold, early in January, its "trade practice submittal" conference—the next step towards making the code effective as a general stabilizing force in our industry.

This conference would be the last opportunity for any and all individuals interested in the marketing of petroleum products to make publicly known their ideas and desires concerning the code, in the form in which it was drafted and endorsed at the meeting of the institute early in December in Chicago.

The industry at large will be apprised of the date of the submittal conference as early as possible, according to W. R. Boyd, Jr., executive vice president of the institute. It will probably be held in Washington.

The effort to have the conference held and the code made effective as quickly as possible is said to be due to the fact that quite a few of the larger oil companies had already made the code effective in their own marketing policies. It was felt that these companies would be handicapped by conforming to the provisions of the code, while other companies carry on their marketing under present generally accepted methods; and particularly if other companies, in the interim before the adoption of the code, push methods which are not countenanced in the code to better their own positions.

It was first thought this situation could be avoided by calling on all marketing companies to put the code into effect at once, prior to its approval by the Federal Trade commission. President E. B. Reeser of the institute on Dec. 13 issued a general statement to all its members in which he recommended that every company engaged in the business make the full requirements of the code effective at once.

Mr. Reeser pointed out that the directors of the institute, when considering and voting on the various clauses contained in the code at the Chicago meeting prior to presenting it to the institute at large, had also voted that, upon its adoption, they would immediately make the code effective in their own companies at once.

The suggestion in Mr. Reeser's bulletin brought up objections from many companies to the immediate placing in effect of the code on two grounds: first, that oil company legal departments would advise company executives against incorporating the code in their marketing policies prior to its approval by the Federal Trade Commission; second, that oil companies which had not had an opportunity to study the code until it was published after the Chicago meeting should not be asked to put it into effect on such short notice, and without having any voice at all in the matter.

President Reeser, therefore, Dec. 16 issued another bulletin superseding that of Dec. 13. This said:

"It is the opinion of many of the directors of the institute who voted for the adoption of the code of marketing practices for refined petroleum products that it should not become ef-

Santa Fe Springs— The Old and New in Oil Production Methods

TWO special articles by Prof. L. C. Uren, regular contributor to NATIONAL PETROLEUM NEWS, professor of Petroleum Engineering, University of California. Starting Dec. 26 issue.

Santa Fe Springs, Calif., through one of those curious circumstances with which nature often confronts humans, typifies both the old and new eras in oil production. Prof. Uren has brought out the difference vividly in two articles that read like a novel.

1923—Santa Fe Springs, a boom townlot oil field in the high fever stage of promotion; its 1250 acres divided among 45 oil companies, upwards of 560 wells drilled in competition for early production. Output went quickly to over 300,000 barrels daily. Depressed prices and financial losses followed.

1928—At the close of a year of groping on the part of the oil producing industry for new methods in the interests of conservation, Nature offered a new zone at Santa Fe Springs. Perhaps an opportunity for the oil industry to rectify its earlier blunders.

What has already been planned there has been described as the "Biggest Step in Cooperation." Better than words can tell it shows the progress in the industry in five years. A more interesting story could hardly be told for any oil man.

fective until after approval by the Federal Trade Commission.

"The members of the institute are, therefore, now advised that, until the commission takes official action, the code will not be in effect."

Many of the principal oil marketing companies had already put the code into effect in their marketing policies, a canvass shows, made by NATIONAL PETROLEUM NEWS of the institute directors who voted on the code at the Chicago institute meeting. Whether these companies will maintain this policy, or will now wait the Federal Trade Commission's action, rests with the individual company. These companies stated the code was already effective in their marketing operations:

Chestnut & Smith Corp., Tulsa; Empire Oil & Refining Co., Tulsa; Midwest Refining Co., Denver; Panhandle Producing & Refining Co., Wichita Falls, Texas; Phillips Petroleum Co., Bartlesville, Okla.; Standard Oil Co. of Indiana, Chicago; The Texas Co., New York; Skelly Oil Co., Tulsa. Other companies represented when institute directors voted on the code said that they had been advised by their legal departments not to make the code effective until some expression concerning it was received from the Federal Trade Commission.

The copy of the code, with its complete documentary history, committee personnel, and list of those attending the general institute session at Chicago, at which it was discussed, was placed in the hands of Chairman A. F. Myers, of the federal trade body, Dec. 14 by Mr. Boyd personally. A duplicate of this data was also presented by Mr. Boyd to Col. W. J. Donovan, of the U. S. Department of Justice.

Inquiry at the trade commission's office by NATIONAL PETROLEUM NEWS Washington representative brought out the fact that, in the commission's experience with codes of ethics in other industries, three months is a short time for a code to be adopted after being submitted to the commission.

The commission has followed the practice of allowing the industry concerned to set its own effective date for its code, because it is recognized considerable time is often necessary for companies to readjust their marketing operations to allow new practices defined in a code to be put into effect, and the industry itself is the best judge as to the time necessary.

Brake Must Hold on Production, Institute President Urges

(By Telegraph)

TULSA, Dec. 17

IMMEDIATE curtailment of operations by individual producing units and the adoption by all associations of producers of a constructive program of promotion of conservation practices is necessary to stability in our industry, according to E. B. Reeser, president of the American Petroleum Institute.

He issued a statement today, asking the cooperation of all concerned to this end. It was considered significant that this statement was made public just before the meeting Dec. 19 of directors of the Mid-Continent Oil & Gas Association, the general organization of producers in the southwest.

In issuing his call, a few days ago, for the meeting of directors of the Mid-Continent association, President W. N. Davis said it was the opinion of many producers it should take an active part in conservation work, which to date as an organization it has not done.

Mr. Reeser asserted that careful analysis reveals that, while some progress has been made toward cooperation to stabilize crude oil output, the actual condition is worse than it was last spring. He pointed out production in the United States is now well in excess of 2,500,000 barrels daily, as compared to 2,350,000 barrels last May. Wildcat drilling in Oklahoma and Kansas is about 20 per cent greater than last May, although the total supply exceeds demand and threatens to increase.

Mr. Reeser referred to a meeting of producers held last April in Tulsa, at which a resolution was adopted pledging operators to avoid unnecessary drilling and to cooperate with their neighbors to avoid the unnecessary production of oil. A committee of seven was appointed at that time, with Mr. Reeser as chairman. He asserts that he now believes it to be his duty to call the industry's attention to its actual and potential condition and to urge that a better organized effort be made to keep production within reasonable bounds.

Directors of the Mid-Continent Association in their coming meeting will have as a principal topic of discussion the setting up of machinery to curb drilling. While the preliminary moves are being made through this association, recent developments indicate that the American Petroleum Institute, forsaking its usual policy, is about to enter upon a vigorous campaign of urging restriction of development activity throughout the country.

In his call for the meeting of directors of the Mid-Continent association President Davis said:

"The general association, covering, as it does, the five states of the Mid-Continent field, is in a position to exert a great influence upon the future progress of the oil producing industry in this region by adopting a constructive policy and actively entering into conservation work.

"In the opinion of many operators the association can materially assist in reducing wildcat operations, promoting pooling or unit development and cooperation generally. We shall also probably have before us the suggestion of the committee of the American Bar Association for a uniform state law to better enable the industry to govern its producing activities through majorities and the assistance of conservation commissions."

The association heretofore has refrained from activity along the line suggested in the president's call, the various restrictive measures adopted being through the medium of operators' committees.

The annual election of officers of the general association will also be held at this meeting.

Nebraska Jobbers Define Good Practice

LINCOLN, Nebr., Dec. 13.—Resolutions defining good oil marketing practice were adopted by the Nebraska Independent Oil Men's Association, which held its eighth annual state convention at Hastings, Dec. 4-6. The practices defined were much along the lines of those set forth in the American Petroleum Institute code of marketing practices, according to C. M. Sutherland, secretary of the Nebraska association.

Posting of actual prices, for gasoline and motor oil, at both bulk and service stations, was advocated and selling to consumers at other than these posted prices condemned.

Giving away of coupons redeemable in other merchandise, or oil, was also condemned, as were all forms of prizes.

Coupon books should be sold and redeemed at their full face value.

Loaning of dispensing equipment to consumers was called unethical.

Tank wagon deliveries to resale accounts should not be made at more than one cent below the posted prices, another resolution read. Another condemned making deliveries from tank wagons into fuel tanks of other vehicles.

Nearly 300 were in attendance at the Nebraska meeting, which was presided over by President S. A. Wassum, Tekamah Oil Co., Tekamah.

Security Airways, Inc., has opened a new commercial airport at Pico near Los Angeles. The field has a 3600-foot runway and is equipped with a complete Richfield service station.

Institute Code Overlooks Basic Facts

By Warren C. Platt
EDITOR

THE effort to have the Federal Trade Commission give prompt consideration to the code of marketing practices drafted by the American Petroleum Institute at its recent Chicago meeting has brought to a head consideration by our industry generally of the code and its various provisions. Because of this fact the accompanying critical discussion of the code is published in this issue. It will be followed, in the next two issues, by discussions of other points which have to do with sound practice in the marketing of oil products.

THE code of ethics adopted by the American Petroleum Institute at its annual meeting in Chicago is sound, it will accomplish considerable good and it should, in the main, be supported by all in the business.

The very fact that it has come forth from the institute shows that the leaders of the oil industry are at last getting down to an intelligent study of the oil markets of the country and that, no matter how lame the start may be, out of that study will eventually come policies which will put the industry on its feet and keep it there. All that has been done so far is very much to the good.

But what saddens our heart is that some of the truly big men of the industry should fiddle around with a lot of stuff that is only incidental and the natural outcome of a false price structure, due to unsound economic activities by companies who should have known and have done better.

The oil industry does not need a code of ethics any more than it needs a dictator, nor than it needs to be running down to the Federal Trade Commission with its troubles. The very leaders of the industry who participated in the writing of this code have it entirely in their power, in their individual authority with their own companies, to do all and more than the code of ethics as drawn is expected to do.

Economic pressure is the governing force in this world and no code of ethics will cure the evils resulting from a defiance of economic laws.

State the Basic Economic Facts

It would have been far more to the point had the Institute's committee on this code of ethics set out the economic facts which pertain to the oil industry and then set forth in detail what the industry must do in order to make a profit and keep in a healthy condition. The document would better have been a statement of these facts and of sound marketing principles and practices, well supported by argument.

What the industry needs is more education and such a report would have been highly educative, not only to the small oil man but to the big oil man as well.

Such a report should have started with the thought that you cannot over produce, over refine or over supply a market without breaking down the price to a losing figure. It should have reviewed the past few years of the industry, from the statistics which are easily available, and showed where such over production has been the dominant policy of all companies, big and little. From these same statistics the committee could have estimated the probable gasoline requirements for the next year or two and then pointed out the ability of the industry, with its present facilities or with such sane additions thereto as may be necessary, to care for that probable increase.

The committee should have emphasized that there is nothing that the industry can do in any limited time to materially increase the consumption of gasoline—and other products might also have been discussed as well. The increase in gasoline gallonage is outside of any control of the oil industry. As that increase can be almost exactly estimated, for the country as a whole, for each state, even for each county and town, the committee should have called on every oil man to govern his plans for increase in business in accordance with the increase expected in his territory and in accordance with the age old natural law that, if he exceeds the normal increase, he is going after the other man's business and then it will be a fight in which the best man will win, but in which all may lose money.

The committee could have gone a long way toward a study of the marketing territories of the country and what refinery districts they should in the natural course of things draw their supplies from. That job could probably be done fairly accurately. Then the committee could point out that any deviation from this survey probably would result in lower than normal prices for the deviators, and if pursued for any length of time, possibly lower prices for the entire country.

The committee could have given a special chapter to an analysis of the tank car markets of the country, what they mean to the industry and undoubtedly it could have suggested several ways in which those markets could be improved and the industry have a clearer conception of their place in the scheme of things and of prices.

Then the committee could have declared, as we believe it would have found it necessary to declare after such an investigation, that the tank car markets are the controlling factor under the consumer's price and that all companies should use the tank car market in figuring their prices to the consumer—tank wagon and service station—rather than their own present system of cost to crude, plus pipe line transportation, plus refinery costs, etc.

If there were no tank car market of present dimensions that last would be the only way to figure consumers' prices, but the tank car market is too large to be ignored in the price structure. It has dominated that price structure for years. It caused all the trouble in South Dakota and elsewhere a few years ago; it is responsible for all the price cutting, the "Q. D. A.," the painting of garages, giving away of pumps, candy and sofa pillows. There is hardly a single evil of consequence in the marketing of gasoline today that the industry's policy of ignoring that tank car market is not responsible for, and there is hardly an evil of any importance than cannot be eliminated by a proper recognition of the tank car market in the price structure.

Some of the big companies in the last few months have changed their prices so as to recognize this tank car market. If they pursue their new policies and the other companies follow, as they will have to, the things condemned in the code of ethics will be done away with and, if the new policy is continued, those evils will not come back to any great extent.

Still a Survival of Fittest

Business always will be a battle for the survival of the fittest and no code of ethics, Federal Trade Commission or the Great Jehoviah Himself—as long as He ordains the affairs of this world as He has—can make it any different. When one company thinks that it is a better company than all the others, that it has a better product, lower costs and a better organization, and sets out to get a 20 per cent increase in business in a territory where there will only be 15 per cent increase, there is going to be a fight.

If the other companies are a bit better than the valiant first one thought they were, and if they put up a better fight than the first one expected, then prices are going to get bad—and if they lose their tempers, which is somewhat common to human nature, they are going to throw free pumps, paint, signs, greasing pits, candy and pillows at each other until they get sick of it or some one or more actually wins.

All that we human beings can do in an effort to avoid a mess of this sort is to supply each other with the greatest possible knowledge of the natural laws of the world, with a knowledge of the conduct of human beings, and with as clear a statement as possible of the facts which will permit an intelligent survey of each company's marketing possibilities; and then hope, that by all this and through ordinary sensible human contact, the "other fellow" will exercise a little horse sense and be reasonable.

Having set forth all this and more too in its report, the Institute's committee could have pledged each member to a sane adherence to the fundamentals involved, and then gone forth and delivered their child to the assembled oil men and it would have been adopted unanimously.

The committee, in view of present conditions might have added a few incidentals, such as the posting of one's true price, condemnation of foolish loaning of pumps and the rest of the items in its code, but they would only be incidental, just as they are today only incidental to the primary point involved in the whole situation.

And, while speaking of incidentals, the committee might have broadened the scope and application of some of its own minor items in its code, much to the good of the whole industry and business in general.

Why Not Include All "Gifts?"

There is no reason why the industry, while condemning the giving of "gifts" for the getting of business at stations, might not have gone further and emphatically condemned the giving of all gifts in business where the aim is to deflect the judgment of the recipient in favor of the giver. We all appreciate the Christmas spirit, for illustration, but one gets dangerously near the dead line in loading customers with gifts of real value at Christmas time.

Another thing, while condemning deviation from posted prices, the granting of extreme credit and all at service stations, why not go further and point out the desirability of doing all business at service stations and as much more elsewhere as possible, on a cash basis? I except, of course, truck drivers employed by reputable companies.

The old Standard Oil companies had this country fairly well educated years ago to pay cash at service stations, but the industry gradually got away from it. There are many arguments of the value of charge accounts, but if a customer likes your goods enough to run a charge account he will pay cash for them if all others also demand cash. The oil industry would find quite a saving there, and it would be no hardship at all upon the customers. If a customer hasn't enough money in his pocket to pay for a few gallons of gasoline, he certainly is not the type of an individual who is entitled to any credit. Here is a real fundamental proposition which the code as now drafted overlooks, while condemning at the same time the selling of coupon books at any discount.

Two more points and we are done—

It is to be greatly regretted that the Institute, such of its members as were present at the code of ethics sessions at Chicago, voted to put themselves under the jurisdiction of the Federal Trade Commission. The present commission appears to be a very fair, sane, outfit, but we all know that in the past it has been anything but that. While we hope it won't have a relapse in the future, nevertheless we have cycles of unthinking radicalism and cycles even of downright graft in politics, so as a rule it is better to stay away from government, as much as possible. History back over the ages shows that.

Industry Its Own Physician

We believe the oil industry has it fully within its power to correct all the evils complained of, as much as they can be corrected in this world of human beings, if the above outlined procedure had been adopted. And if the above procedure is not followed by the larger companies, not even the Federal Trade Commission can correct the evils. So the industry has the job to do itself and it would be far better if the Institute's directors should decide to withhold this matter from the Federal Trade Commission for a while, put its committee on this code at work again on the fundamentals of the situation and request the committee to hold hearings on the whole subject throughout the industry and see if the men themselves will not work the problems out.

As the code now stands, every bit of price trouble will automatically get before the Commission, if every one lives up to the code, and if every one does not live up to the code about taking in fractions to the Commission then it is quite likely they will slip in other respects.

At the present time, as the code now reads, a company cannot meet a competitive condition without first getting the permission of the regional director of the marketing or code committee and then, when he does get that permission and he does meet that condition, he must at once file a complaint against the competitor before the Commission. That is too much red tape for any business to operate under, and we say that appreciating that some of the ablest men in the oil business, men who are sincerely and vigorously doing much to clean up the present situation, were wholeheartedly for the provision. But we agree with Col. R. W. Stewart, of the Standard of Indiana, who held out in the directors' meeting of the Institute for a long time, insisting upon the sound business right of meeting competition where and how he found it and according to his own judgment. He finally compromised on this regional director's permission business.

While it may be thought there won't be many such situations arise, nevertheless, if the past is any criterion, there should be enough to keep the regional directors

busy attending to other people's business rather than their own, and probably enough to give the Federal Trade Commission plenty to do. It is fine to argue that the fear of the penalty involved will keep all in line but human nature does not work that way.

And the last point—

Once before the Institute developed an important report in secret—the report of the old Committee of Eleven on Conservation, in the early days of the Coolidge administration's efforts to stir up the industry on the necessity of moving faster in saner production methods and policies. That report was buried the minute it came from the press and with practically unanimous consent. The method of producing that report did not do any good within the Institute. That organization still suffers in places from the effects of the method.

While this code of ethics was not born under any such circumstances, and the feeling regarding it is the best regardless of the divergence of views, nevertheless the method pursued savors somewhat of the method of some years back. The Institute cannot hope to be the leader of the industry and to reflect at all times the real opinion of the industry by any such faulty method. All its other committee work has substantially been out in the open. Any one who was entitled to know has been told what was going on. Committee meetings have in effect been wide open, though for practical purposes the public has not always been invited in, but for all practical purposes the industry has been allowed to know what was going on.

This code of ethics by its very nature was and is a public matter. There was no reason at all why the industry, through its trade press and any other representatives who cared to, should not have heard all the committee sessions. There was no reason why the regional committee's reports should not have been made public as they were completed, in order that there be the fullest discussion. There was no reason why the board of directors of the Institute, when it considered the final report of the general code committee, should not have staged its discussion of many hours before as large an audience of oil men attending the Institute's meeting as wanted to hear it. None but a director of course should have been given the floor unless invited by the directors to speak.

If this procedure had been followed there would be a different feeling regarding the code, there would be a fuller understanding of it, and it is entirely possible that the code would be a bit different in nature than it is now.

And the strange part of it is that there was no real reason for any such secrecy as was maintained. There was everything to gain and nothing to lose by the widest possible publicity and discussion of the code as it progressed through the various committees and discussions.

The American Petroleum Institute is a wonderful organization, that has done a most tremendously big job in representing probably the worst war-torn industry in the world. It should always live up to its great ideals of method and service.

Series of Crude Price Advances Puzzles Pennsylvania Refiners

Staff Special
CLEVELAND, Dec. 17

SIX advances in the price of Eastern field crudes, for a total gain of $1.05 in Pennsylvania grade, in 1928 has set a record in contemporary petroleum history. There have been no reductions this year, the first year since 1920 in which there has been none.

The latest advance, that of 25 cents a barrel Dec. 14, perplexes refiners in western Pennsylvania when they consider the price of Mid-Continent crude, and the present state of our industry's production and demands.

Increased demand for crude from refiners, rate of production, and the attitude of producers about storing crude, are economic factors entering the picture, Pennsylvania refiners report. Opinions of refiners on these points, however, show marked differences, and what one man holds to be the basic reason for present conditions is at variance with his fellow refiner's idea.

Some light on crude oil production, stocks at refineries, and deliveries to refineries is cast by the latest Bureau of Mines statistics. As data collected by the Bureau are issued under slightly different classification than that used for this comparison this point must be borne in mind.

Daily average production for Appalachian field in October was 88,800 barrels as against 82,400 barrels in September, a gain of 6400 barrels in the more recent month. In the first 10 months of 1928 Appalachian field production was 25,868,000 barrels, compared to 25,495,000 barrels for the corresponding period of 1927.

Stocks of crude oil at refineries Oct. 31 were 2,131,000 barrels in the Appalachian field as against 2,185,000 barrels Sept. 30. These stocks may include Mid-Continent and Central States oil because two eastern Ohio and three western Pennsylvania plants operate on western or Kentucky crude.

Deliveries of crude oil to consumers has been increasing in the past year, the Bureau's figures show. In October the Appalachian field delivered 95,000 barrels daily average and in September 99,200 barrels daily, but for the first 10 months deliveries amounted to 27,104,000 barrels this year and 25,669,000 barrels from January through October in 1927.

Here are some opinions of the present market structure held by western Pennsylvania refiners. A Warren refiner believes there has been a superficial demand from some refiners on account of increased capacities and new equipment, while producers have been storing crude with a consequent artificial shortage.

From one Titusville district refiner comes the opinion that there is not enough competition among purchasing agencies to handle the economics of the crude situation. Another Titusville refiner said that producers were talking $4 crude oil. And on the other hand some refiners said producers were as astonished as refiners at this year's trend of crude markets.

One refiner was of the opinion that the crude market would follow the natural economic course and future price changes would be the result of the willingness of producers to sell and of refiners to buy. That the crude market would come down after Jan. 1 was the opinion of another refiner.

Loss of motor oil markets might result if crude prices should become prohibitive, most refiners feared.

The 600 steam refined stock is 12 cents higher today than at the first of 1928, NATIONAL PETROLEUM NEWS records show. This commodity in January was 9 cents. It rose to 12 cents in July before faltering 1 cent. In a month 600 steam refined was up to 13 cents and has been climbing ever since until considerable shopping is necessary today to find some even at 21 and 22 cents. Light bright stock has gained 8 cents this year beginning January at 28 cents and selling for 36 cents today.

Commission Powerless To Enforce Oil Code, Says Its Ex-Chairman

THE rule of the Federal Trade Commission under which the American Petroleum Institute seeks to establish as law applying to the entire oil industry, its code of ethics recently adopted at Chicago, was blown clear out of the water, on the same day the oil men were taking action on their code, by no less a personage than the recent former chairman of the Commission, William E. Humphreys and who is still a member of that body.

Mr. Humphreys in vigorous language of the meaning of which there can be no doubt, condemned the rule as unconstitutional and frankly told the brick manufacturers, whom he was addressing, that no one need pay any attention to the rule or anything promulgated under it, and that if a business man did engage in one of the trade practice conferences and did not want to abide by it and proceeded to violate it, he could do so with impunity. The whole scheme, he said, had no basis in law and is the height of absurdity.

Mr. Humphrey made one point which is contrary to the opinion of oil men and their attorneys expressed at the Chicago meeting, that is the Commissioner said that on matters which the statutes do not now recognize as unlawful, the commission only sought to bind those who voluntarily agreed to the codes of ethics and that the commission had no jurisdiction over those not agreeing to the work of a conference, nor jurisdiction over any one who subsequently withdrew. The understanding given the audience that discussed the code of ethics at Chicago was that the Commission, once it had approved a code of ethics and after it had been "adopted" by a "representative" portion of an industry had power to enforce the code upon both those who agreed and also upon those who did not agree, who may not have attended the conference, or who perhaps never heard of the code until after they had been cited for "violating" it.

In another editorial in this issue we express a hearty and definite disapproval of the Institute's idea of taking its troubles to Washington but little did we think to find at such an early date such strong corroboration of our opinion and from such a high source—none other than a member of the Commission itself.

The official position of the Institute has been to stay away from Washington as long as possible, to try every thing else before going there. In the matter of conservation of natural resources, the Institute has maintained this position, even to the point where it has received criticism from members of the industry—yet here in the matter of trying to cure some marketing evils which obviously will be cured only by a sound price structure which the leaders of the industry alone can make, the Institute is running wildly to Washington, moving so rapidly that the proverbial game of checkers can be played on its collective coat tail.

It was, in our opinion, the understanding at the Chicago meeting that while the code would eventually reach Washington, it would be transmitted there in a deliberate manner, that there at least would be no unseemly panic to get it there. Representatives of state oil jobbers' associations particularly, when they criticized the secrecy and haste with which the Institute conceived and gave birth to the code, were assured they would have plenty of time to study the code and if they wished, could appear before the Commission and discuss it. While such appearance still is not barred, nevertheless, it would seem that the Institute is moving a bit more rapidly to Washington, than the case requires.

In view of Commissioner Humphrey's blasting words, it would seem that the Institute might wire the Commission to withhold consideration of the Code of Ethics, and then ask a few more of its lawyer members to pass on it, to say nothing about giving the whole industry more time to study it and the problems that it seeks to solve.

Commissioner Humphrey says he does not stand alone in his opinion of the Commission's present practice, in fact he intimates that the three majority members of the Commission are alone in their position. Certainly, therefore, it would seem reasonable that Commissioner Humphreys can get considerable support from oil lawyers.

The Commissioner's remarks are getting much publicity in the business press, and because of the thoroughness of the story, we reprint his remarks and the story with which they appeared in the last issue of Printer's Ink, Weekly:

"THERE seems ever to be a desire on the part of Governmental departments and Governmental bureaus to increase their jurisdiction; to reach out for more power; they are never satisfied. The Federal Trade Commission is not entirely free from this urge. . . ."

"The Commission not only assumes the omnipotent power to make laws but also the power to enforce them. We are the legislature—the judiciary—and the executive. We supersede Congress, and the courts, and the President. . . ."

"Imagination cannot picture a more farcical proposition. What a theme for a comic opera!"

* * *

The quotations that appear above are startling by themselves. They would be startling even were they made by one who has never hid the fact that he is a sworn enemy of the Federal Trade Commission. But to characterize them as startling is to use a mild descriptive term when it is known that these remarks were made, not by someone unacquainted with the work of the Commission, not by one who is in out and out opposition to the Commission, but by one who until a few weeks ago was chairman of the Federal Trade Commission and who is still one of the five members of that body.

We refer to Commissioner William E. Humphrey, who made these remarks in the course of an address delivered December 6 at Hot Springs, Va., at the national convention of the American Face Brick Association. There was much more that Mr. Humphrey said of an equally amazing nature and because his statements are so unusual they will be given here in practically complete detail.

However, before doing so, it is important to furnish certain facts which will help in obtaining a better understanding of the circumstances which led Mr. Humphrey to deliver his rather sensational talk.

In the first place, it should be understood that Mr. Humphrey was not attacking the Trade Commission as a whole. In fact, it would be entirely proper to say that the fundamental idea on which the Commission is based has no more ardent supporter than Mr. Humphrey. His verbal darts were aimed, rather, at one specific function of the Commis-

sion—a function which the Commission recently decided, of its own accord, to add to its already imposing list of responsibilities.

This function has to do with the Trade Practice Conference plan which the Commission has been so energetically pushing. As is rather well known, the primary purpose of these Trade Practice Conferences—which are called either at the Commission's instigation or by request of the industry itself—is to get the industry to list those practices which are admittedly *unlawful* and then agree to avoid these illegal practices.

With this purpose there can be no quarrel. But the conferences usually have also a secondary purpose, and it is at a phase of this secondary purpose that Mr. Humphrey launches his stinging darts. Under this secondary object, those who attend these Trade Practice Conferences customarily draw up a list of practices which, while *not* unlawful, do not tend to advance the economic interests of the industry. These practices come under what is known as Group 2 of the Trade Practice Conference rules. When these practices have been condemned by the industry itself, at a Trade Practice Conference, and when this condemnation is accepted by the Commission, those members of the industry who have approved are expected to refrain from indulging in the condemned practices.

It is necessary to reiterate that these practices are not legally defined as unfair methods of competition. They are simply those trade nuisances which exist in almost every industry. But, according to Mr. Humphrey, once a Trade Practice Conference has condemned them, and this action of the Conference is accepted by the Trade Commission, then, under a new rule of the Commission, a lawful practice is deemed to be unlawful simply because of this Conference action and the Commission may issue cease and desist orders against violators on the grounds of unfair competition.

The new rule to which Mr. Humphrey refers was passed on October 1, 1928. This is how it reads:

"That the clandestine violation of any of said resolutions, those accepted by the Federal Trade Commission merely as expressions of the industry as well as those approved by said Commission, shall be deemed unfair methods of competition."

Now let Mr. Humphrey proceed with his talk.

* * *

This resolution refers to what is known as Group 2 of the Trade Practice Conference rules. These rules forbid what the Commission has heretofore considered lawful. They refer to economic and ethical questions, and not to unfair methods of competition.

This resolution makes an act, not in itself unlawful an unfair method of competition, and if such rule is violated clandestinely the Commission will attempt to enforce an order to cease and desist against the party so violating it. It makes unlawful what has heretofore been lawful.

Why was this action taken? There seems ever to be a desire on the part of Governmental departments and Governmental bureaus to increase their jurisdiction; to reach out for more power; they are never satisfied. This is a natural result of the bureaucratic system. It is especially true with those who have been long in departmental service, and particularly those who have never had any experience except from the Government side. They become imbued with the bureaucratic complex and with the idea that a man brought up in a Government office knows much better how to run any business than the man who owns it.

The Federal Trade Commission is not entirely free from this urge. Notwithstanding the wonderful success of the Trade Practice Conference, the feeling that we should have greater control over business, for the good of business, was ever with us.

There has been quite a wide-spread feeling that the effect of this resolution will largely injure, if not completely destroy the Trade Practice Conference system. It has alarmed business. It is believed that business and the legal profession will not look with favor on this attempt of the Commission to increase its jurisdiction and powers; that business men will hesitate in entering a conference, which may result in yielding some right that they now have.

Several lawyers have already advised their clients to keep out of conferences as long as the Commission maintains its present attitude. While they think the position of the Commission is a legal absurdity and the whole matter simply a humorous gesture, still they advise their clients against placing themselves in a position where they may be made parties to the litigation that may grow out of the situation. Many business men will take this advice of their attorneys—quite naturally, and I cannot say improperly, for business fears litigation above all things else, except bankruptcy. Often the two are synonymous.

Heretofore we have only attempted to enforce the observance of rules in Group 1, not because they had become rules, not because they had been approved by the Commission, but because the acts that they prohibited were unlawful practices and condemned by the statute. In other words, we never have attempted to enforce any rules, but simply to prohibit the violation of the law as it now exists.

To state the proposition in another way, so that you may know the exact question involved: Under this resolution the clandestine violation of a rule adopted by a conference and approved by the Commission becomes unlawful, although the practices prohibited by it are now lawful.

The underlying principle is this: That a rule against action now perfectly lawful, when approved by the Commission has all the power of a statute enacted by Congress. The Commission not only assumes the omnipotent power to make laws but also the power to enforce them. We are the legislature—the judiciary—and the executive. We supersede Congress and the courts, and the President. I hope that we have assumed these remarkable powers with becoming modesty and humility.

We have this advantage over Congress. We do not have to run any risk of having our legislation vetoed—nor is there any danger of disapproval being expressed at the polls.

This is the performance: the Commission calls together in a private conference, a group of private citizens who adopt certain rules with reference to their private business. If upon these rules the Commission places the stamp of its omnipotent approval, by that fiat they are changed into laws with all the force and effect of an act passed by Congress and signed by the President. The citizens throughout the United States are bound by them and the strong arm of the Government will be used to enforce their observance. Imagination cannot picture a more farcical proposition. What a theme for a comic opera!

Somehow I have some misgivings that the President, the courts and Congress will look with entire approval upon this bloated greatness that we have so suddenly assumed.

This resolution was passed by a three to two vote. It involves purely a question of law. The deciding vote was cast by the farmer member of the Commission, who would be the last to claim that he was a lawyer. I confess that under the circumstances this action does not bind my conscience nor appeal to my judgment.

This action creates a new legislative body.

It gives to acts of private citizens, when approved by the Commission, all the force and dignity of Congressional enactment.

It makes the clandestine violation of a private contract an unfair method of competition.

It makes what is a lawful practice in one industry, unlawful in another.

It gives every industry the right to make its own laws.

It creates a situation where what is lawful today may be unlawful tomorrow.

To the making of laws, there now seems to be no end, but if this action of the Commission is upheld, it would increase the output beyond

computation. Every little industry, even of two or three individuals would gather together and pass laws that they believe would be to their advantage. The public interest would be entirely lost sight of.

Like all propositions that are fundamentally unsound, follow it in any direction and it ends in absurdity.

It makes it lawful for those who stay out of the conference to do certain things that it is unlawful for those who join the conference to do.

It places a premium on the "bushwhackers" and pirates of business.

It gives special privileges to the very class that we desire to control and suppress.

It gives to those who will not approve the action of a conference an unfair advantage over those who do.

The majority in passing this resolution said there was doubt as to its legality. I think they are mistaken. I think those who voted for this resolution stand alone in the doubting class. My judgment is that lawyers generally have no such doubt. This doubtful question the majority says should be speedily determined in the courts. But how can this be done? So far they have failed to even attempt to give an answer to that question. The majority places great emphasis on the word "clandestine." It is the "clandestine" violation of the rule that they claim makes it unlawful. A violation openly is not unlawful. Secrecy is the essence of the inquiry. If the Commission issued an order against a violator, it will be not to cease and desist from violating the rule, but to cease and desist from clandestinely violating it.

When it has been discovered by the Commission and it has published the fact to the world, and has produced evidence to sustain it and necessary to furnish the foundation for such order, all of which they must do before taking any steps against it, can it be said that the violation is any longer clandestine? This is the only recorded instance where wrong is changed to a virtue by being found out. Whenever we have facts sufficient to issue an order against one to stop violating a rule clandestinely, has it not already ceased to be a clandestine act?

How can a man continue to practice a method of unfair competition clandestinely after the Commission publishes to all the world that he is doing it? If it is generally known that a man is following a practice, is he following it clandestinely? He could do it before discovery clandestinely, but not afterward. The Commission could never issue a complaint to cease and desist from following a plan clandestinely for the very issuance of the complaint would destroy all secrecy and render the practice no longer clandestine or unlawful. No one could violate an order based upon such complaint if he tried, because by the time this was done, by the publicity that the Commission gave his action, it would be made perfectly lawful. If he does not violate the order he cannot be brought into court under the Federal Trade Commission Act. The very use of the word clandestine makes it impossible to ever have a judicial decision upon the question involved.

The proposition that the Commission, a public body, the acts of which are open to the widest publicity, can issue a valid order after complaint and trial against anyone to cease and desist from following a plan of unfair competition clandestinely, is impossible, and the mere statement of the case shows the ridiculous absurdity of the proposition. As well say that a bank could advertise in the papers that on holidays it would clandestinely keep open its doors.

This is one case where publicity completely cures the evil. Publicity destroys the "clandestine." In sum, the question involved amounts to this: It is impossible for the Commission to issue a valid order to cease and desist from doing a thing clandestinely.

Remember the Commission has none of the powers of a court to punish. It cannot punish for acts done. It cannot tell a violator what to do. It only has power to stop. Automatically a violator stops following a practice clandestinely when he is discovered, and we must discover him before we can order him to stop. Of what force and effect is such an order and how can it be violated?

Again, any party has it within his power at will to defeat any action the Commission may bring against him under his resolution. The heart of the action is the violation of a rule of a conference to which the party proceeded against belongs.

It is admitted by all that any member has a right to withdraw from such conference at any time he pleases. To illustrate: The Commission brings suit against a member for the clandestine violation of one of the rules of the conference to which he belongs. The Commission serves the complaint upon him. He has thirty days in which to answer. He answers that he is no longer a member of the conference. That answer is good. The Commission no longer has jurisdiction over him. That absolutely ends the matter so far as the Commission is concerned. He can thereafter follow the practice openly or clandestinely as he pleases.

I apprehend that this is exactly the action a party will take on all occasions to save the cost and annoyance of litigation, whether he has been guilty or not of the practice charged in the complaint.

I do not think that anyone will ever be brought into court for violating the new rule promulgated by the Commission. I think that the position of the Commission in this matter is so untenable that it will never even attempt to enforce it. I do not think it can possibly get the question involved into court, even if the Commission were to try, for the reasons already pointed out. I think that when it comes to the test it will not even try to get an order against anyone violating this provision.

This is the rock upon which I base the assertions I have made, and against that rock all the sophistry and all the ingenuity of those grasping for greater jurisdiction and more power cannot prevail: and that is, that the Commission's power and jurisdiction is just the same today as when Congress passed the act creating it, and will remain the same until Congress changes the law; that the Commission cannot add to or take from that law.

The Federal Trade Commission is a creature of Congress. It is a mere ministerial body. It has no equity jurisdiction of a court. That it can legislate; that it can make laws, or can make unlawful that which is now lawful, or lawful that which is now unlawful; that it can make a method of competition that is now fair, unfair, is a proposition so utterly untenable that any argument upon it only increases its supreme absurdity. I apologize for discussing the question at such length but it takes so many more words to explain the perfectly obvious.

My purpose today is to reassure the business of the country insofar as I can in order that the Trade Practice Conference may not be destroyed.

I do not hesitate to say that this action taken by the majority, in my judgment, is of no force and effect whatever, and that any citizen may entirely disregard it without danger.

The chances of any business man ever getting in trouble by taking part in a conference because of the recent ruling is remote, shadowy and intangible. I believe that this will be the position of the bar of the country when they thoroughly understand the question. I do not anticipate any such result but if this action, which in my judgment was most unfortunately and unwisely taken by the Commission, should result in the destruction of the Trade Practice Conference system, I know that you will agree with me that it will be a nation-wide business calamity.

Late Market Change

(By Telegraph)

NEW YORK, Dec. 17.—On Dec. 24 Standard Oil Co. of New Jersey will establish a uniform tank wagon price of 13 cents on kerosene throughout its territory, with no concessions from this price to any class of trade. This change represents a 1 cent reduction generally, except at Baltimore where the price now is 12 cents. Price at that point will be advanced 1 cent, to 13 cents.

Wastage Of Pressures Invites Water, Scaling Down Muskegon Yields

By Paul Wagner
N. P. N. STAFF WRITER

MUSKEGON, Mich., Dec. 13

TO SPEAK of oil in Michigan at present is to talk in terms of Muskegon.

What might have been a profitable settled field here, of a few thousand barrels daily production, has turned out to be a comedy of errors in miniature, because of overdevelopment.

A succeeding article will outline the possibility of future Michigan development comparable to fields of the central west, for which Muskegon has provided a key. Meantime, a multiplicity of pipelines built—the hotel lobby—to handle Muskegon's natural gas supply, plus a "spectacular" well fire, has deferred for a week the writing of that article, in favor of discussion of topics of greater current interest here.

The well fire, which occupied important space on the front page of the Muskegon afternoon newspaper, was at first mistaken for a leak on fire from a gas pipeline break. It was learned from the Muskegon Chronicle, however, that the fire was at first "easily put out with buckets of water from a nearby puddle. It blazed up again, however, when the control head was shut in and it blew out the gaskets."

I arrived in Muskegon yesterday, at the end of a week's study of the state's oil possibilities, based on past development, known geology and the opinions of experienced operators scattered over Michigan.

Under normal procedure the deferred article referred to above might properly have been written first. I was unprepared, however, for the shock of the evening sessions of the lobby congress in the Occidental hotel, wrestling with the problems of disposing of the field's natural gas surplus and utilizing the volubility of the promoters. Nothing seemed quite as important, thereafter, as a message to a waiting industry that would relieve its anxiety on this subject.

The Muskegon field includes about 70 oil wells making 2300 barrels of crude daily and 19 gassers capable of combined open flow production of about 200,000,000 cubic feet daily. As regards oil the combined production of all wells is less than that of one good normal West Texas completion. Many high pressure gassers in the southwest have individually equalled the combined flow of all Muskegon gas completions.

Wagner at Muskegon

WHILE the Muskegon, Mich., oil field is not as important an oil production center as local enthusiasm would lead to believe, this district may be an important key to future developments in this general territory.

This is the conclusion drawn by Paul Wagner, production analist for NATIONAL PETROLEUM NEWS, after a trip to this field.

In the accompanying article, the first he has written as a result of that trip, he discusses the taking of excess quantities of natural gas from the structure at Muskegon, thereby reducing the ultimate oil recovery.

Mr. Wagner's second article, to appear in the following issue, will discuss the possibility of other fields making from 6000 to 10,000 barrels daily settled production if properly handled.

Four pipelines have been built distances of two to three miles to deliver a maximum of 30,000,000 cubic feet of gas daily for domestic and industrial use in greater Muskegon. A fifth gas pipeline is now under construction.

The gas that is going into these pipelines is being taken from the two oil producing horizons so far developed in the field, one in the Traverse formation at about 1650 feet and the other probably in the Dundee at approximately 2100 feet.

Some of the promoters have failed to recognize that Muskegon is primarily an oil field yielding gas to flow the wells instead of a gas area to be wantonly exploited at the expense of petroleum production.

So long as the gas piped away does not exceed the amount necessary to lift the daily oil production the field is not being especially damaged except as regards repressuring and natural gasoline recovery. It is when the evangels of individualism insist on blowing their gas wells wide open into the turquoise void that reservoir pressures are irretrievably reduced in this field and water encroachment hastens alarmingly.

It would be bad enough to ruin an oil field that might have yielded 7000 to 10,000 barrels settled daily production even were the gas found with the oil sold profitably in the field. As it is, some of the pipelines have taken advantage of the distress of the operators to beat down well prices as low as five cents per thousand cubic feet. This figure represents a net loss to the operator of from 7 to 10 cents per thousand cubic feet, according to estimates of R. A. Smith, state geologist, at Lansing.

In their short-sighted policy, the pipeline companies have been aided and abetted by civic organizations of the communities composing greater Muskegon. In order to gain temporary financial advantage, they have penalized the oil development of a field where it is estimated a gas-oil ratio of 1500-2000 cubic feet per barrel of oil is needed to give maximum recovery economically.

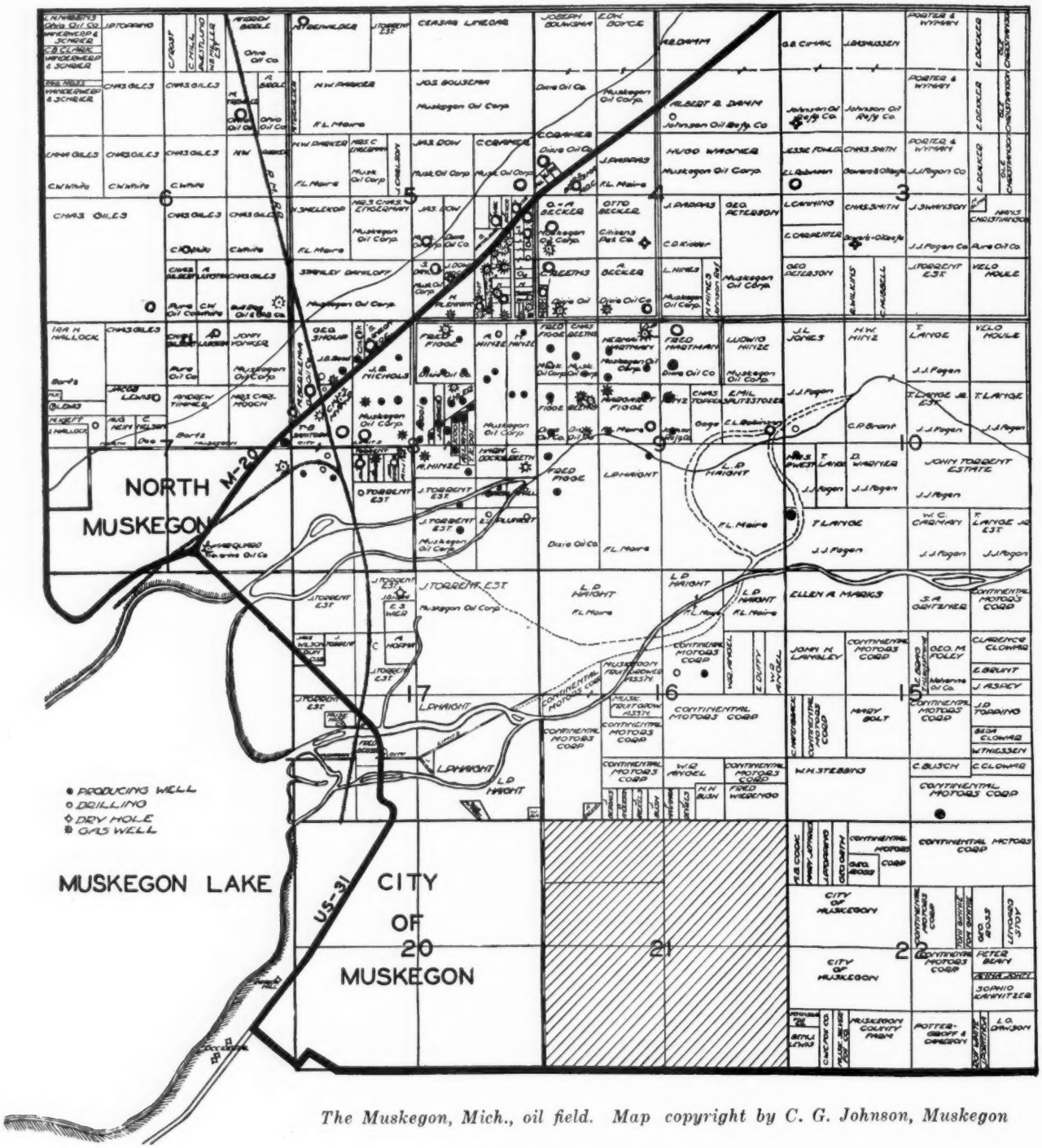
Promotion type operators have elected to blow five-cent gas into the air in a few instances, endeavoring to complete their wells for oil. In at least three cases such practices caused wells to be entirely flooded out by water, which also damaged other properties in the field. Incursions on adjacent wells increased as much as 55 per cent.

Plugging-back methods and other workovers have afforded temporary relief at some wells, but water encroachment and reduced pressures have greatly cut the present field's ultimate yield.

THERE is no shut in production at Muskegon, statements of promoters to the contrary notwithstanding. The 70 producing wells average around 33 barrels per well per day of 36 to 40 A.P.I. gravity oil, which is bringing the Mid-Continent price schedule. High initial production estimates have been based generally on tests of a few minutes duration which could not be maintained under conditions existing in the field.

Wells at Muskegon have come in generally for flush initial productions of 100 to 450 barrels daily, although a few were rated originally at 2000 to 3000 barrels.

Many of the wells in the upper pro-



The Muskegon, Mich., oil field. Map copyright by C. G. Johnson, Muskegon

ducing horizon, which received first development at 1625-1650 feet, are now making less than 20 barrels on the pump. Development in the deeper horizon found at 2200 feet has been comparatively recent and sufficient time has not elapsed to reduce wells to the pumping stage. The deep wells also have shown rapid decline from their relatively high initial productions.

West and north of the discovery area, two divisions of the field were drilled on smaller irregular parcels, including celery beds and sub-division lots, on an average basis of one well to three acres. In other parts of the field, where land parcels are larger and more regularly shaped, wells were spaced on a basis of one to eight or 10 acres.

Most operators at Muskegon are small and of the promotion type, some of them emerging from local obscurity and others coming in from Ohio, Pennsylvania, Kentucky and Indiana.

Dixie Oil Co., Inc., subsidiary of the Standard Oil Co. of Indiana, is the only major operator with production and it is also the sole purchaser of crude. Its oil is shipped in tank cars over the Pere Marquette railroad to Saginaw, Mich., where a 3000-barrel skimming plant is operated. Should Michigan production warrant, it is understood lake tankers will be operated to move the oil, either to Saginaw or to the Standard's Whiting refinery at the south end of Lake Michigan.

Muskegon Oil Corp., which discovered the field in December, 1927, is the largest single acreage holder and with its subsidiaries leads in daily production with about 60 per cent of the field total. As now constituted, the corporation holds approximately 50 per cent of the stock in three subsidiaries which include the Lake Shore Petroleum Co., the Citizens Petroleum Co., and the Muskegon Development Co.

Johnson Oil Refining Co., of Chi-

cago, which is widely known in the distributing branch of the industry, now has about 30,000,000 to 40,000,000 cubic feet of gas and 70 to 80 barrels daily of crude production in the field. It is drilling additional wells, including one calculated to extend production to the northwest.

It costs approximately $6000 to $10,000 to drill and equip a Muskegon well, depending upon the respective abilities of operators and contractors. All drilling is by the cable tool method, 10-inch and 12-inch drive pipe being carried through a surface cover of about 325 feet of glacial drift overlying Paleozoic beds.

Traverse production at 1625-1650 feet comes from upper Devonian beds and the 2200-foot pay is either in the Dundee, of lower Devonian age or the Monroe, of upper Silurian.

Most of the wells are drilled with portable rigs, frequently installed in 60-foot standard derricks of steel or wood. After completion of wells the derricks are customarily moved away. Most wells are given light shots of nitro-glycerin, seldom exceeding 60 quarts, when they decline.

On the basis of 3000 to 4000 barrels, maximum final recovery, estimated for the field, it is fortunate that original acreage costs were virtually nil; else Muskegon operators could hardly have hoped to show a profit, much less make one. Sales of producing properties have run as high as $5000 an acre.

Ray Miller New Secretary Of Gasoline Association

TULSA, Dec. 17.—Ray E. Miller was elected secretary of the Natural Gasoline Association of America, at a meeting of the board of directors here today. He succeeds A. V. Bourque who resigned effective Dec. 15 to become associated with Howard Bennette, managing director of the Western Petroleum Refiners Association.

Mr. Miller has been associated with the Marland companies as safety director since 1920 except for two years. In 1925 he was given a leave of absence from Marland to organize the safety division of the Mid-Continent Oil and Gas Association. While with the association Mr. Miller displayed organizing ability in building up a working safety group which has enlarged its activities year by year and has been instrumental in saving many lives through first aid work and educational activities.

Mr. Miller entered on his new duties with the Natural Gasoline Association immediately following the meeting of the board of directors. Mr. Bourque assumed his new position as secretary of the Western Petroleum Refiners Association this morning.

S.O. Ohio Allows Public Bureaus And Utilities 2-Cent Discount

Staff Special

CLEVELAND, Dec. 15

STANDARD OIL CO. OF OHIO Dec. 15 modified the gasoline market price structure it put into effect Nov. 15, to grant 2 cents discount from the service station price for either service station or tank wagon deliveries of gasoline to governmental departments and public utilities. The 2 cents is termed a "special discount" and the modification order defines the beneficiaries of this special discount and how they may get it.

Taxicabs are not included in the "public utilities" but bus and trucking companies that operate under a state and not a municipal permit are granted the discount under a written contract for charge accounts. The commercial account generally will get only the 1 cent discount from the service station price for tank wagon deliveries. Under the modification governmental departments and public utilities will pay 1 cent a gallon more than dealers pay. The modification order follows:

"The Standard Oil Co. of Ohio announces that effective Dec. 15, 1928, it will allow the following special discount on sales of gasoline to all departments of the federal government, to all departments of the state government and political subdivisions thereof, including county offices, school boards and municipalities, and to public utilities as hereinafter defined to-wit:

"Either for delivery by tank wagon or at service station—2 cents per gallon off the posted service station price.

"The term *public utilities* shall include railroads, street railways, interurban railways, railway express, motor transportation concerns engaged in the transportation of passengers, freight or express under license from the State Public Utilities Commission, companies engaged in furnishing light, heat or power under license from the state and telephone and telegraph companies. It does not include concerns furnishing transportation solely under authority of a license from a municipality.

"The foregoing special prices to public utilities shall apply only to purchases made under written contract for charge accounts. Contracts will not be required as to governmental departments, but as to those the special discount will only be allowed on credit sales, and no coupon books will be sold to any one at a discount except to the state highway department, for which a special coupon book, indicating on its face that it is exclusively for the state highway department, will be furnished and sold at a discount of 2 cents per gallon off the posted service station price.

"This announcement is made as a special exception to the price structure by the Standard Oil Co. of Ohio, effective Nov. 15, 1928, which price structure, as announced, will remain in full effect except as above noted."

Osage Sale Brings Small Prices

TULSA, Dec. 15.—Things broke badly for the Osage tribal members at the Dec. 11 auction of oil leases in the reservation, a total of $437,410 being realized from the 27,443.30 acres sold. Lacking discoveries of any consequence, the Osage lands offered for lease are in general in wildcat territory and are so treated by the bidders.

The so-called east side acreage, that located east of Range 7E, is pretty well picked over and has yielded nothing for years except small pools. Of the 15,200 acres offered in this area at this sale, 13,920 acres were leased for total bonus of $148,110, or $10.64 per acre. Bidding was a little better on this class of acreage than at recent sales, not so many 160-acre pieces being knocked down at $100.

Tract No. 63, the NE of 3-23-8E, offset north and south by production, was bid in by W. D. Gray and others for $28,000. It is six miles north and two miles west of Hominy. The same bidder bought the adjoining tract, No. 64, the northwest quarter of the same section, for $16,500. Mr. Gray is understood to be representing J. S. Cosden.

For the "west side" tracts, acreage west of Range 8E, a total of 14,879.65 acres was offered, of which 13,523.30 acres were leased for bonuses aggregating $289,300. The average price per acre was $21.40. Since the decline of Burbank and the apparent pinching out of the extensions along the east and southeast sides of that pool, little that was attractive to the oil companies has been offered.

Two tracts in the Burbank area brought good prices, the Carter Oil Co. paying $70,000 for the NE of 33-26-6E and $82,000 for the NW of 34-26-6E. Both tracts adjoin the SE of Sec. 33, on which the Carter recently completed a well for about 50 barrels daily, being an extension of more than a half mile on the south end of the Burbank field.

Shakely New Vice-President Of Frick-Reid Supply

J. L. SHAKELY

TULSA, Dec. 15

J. L. SHAKELY is the new vice-president of the Frick-Reid Supply Co. mid-western division. He is succeeded as vice-president in charge of sales by Mr. McCoy, former sales manager.

No newcomer with the Frick-Reid, Mr. Shakely has served the company in many capacities. He first joined the sales department in January, 1914, when Frick-Reid was much smaller than now. Prior to that time he had been cashier of the First National Bank of Aspinwall Pittsburgh. He has come the route of the executives of many large companies. Up through the ranks, first as assistant sales manager, then vice-president in charge of sales, and now as vice-president of the entire mid-western division. This territory for Frick-Reid includes the mountain states, Kansas, Oklahoma, New Mexico, Texas, Louisiana, Arkansas and Missouri.

Mr. Shakely was born in the oil country, back in Clarion county, Pa. Outside of thinking up new ways to sell gadgets to oil men, his hobby is the handling and showing of fine saddle horses. He has two at present which are believed to be show prospects.

Mr. McCoy, who succeeds Mr. Shakely, joined the Frick-Reid company in 1913. Working up through the branch offices he became, first, district manager, then sales manager, and now, under the present organization, he is in charge of general sales and stores.

Oil Journal Publisher Dies in Tulsa

TULSA, Dec. 17.—Robert W. Egan, aged 56, vice-president and general manager of the Oil & Gas Journal and vice-president and associate editor of the Oil City Derrick, died at his home here Dec. 15. His death followed an attack of influenza which began with a cold contracted at Chicago during the meeting of the American Petroleum Institute.

High Requiem mass was to be solemnized at the Church of Christ the King here on Dec. 17. Later the body was to be taken to Pittsburgh for burial.

Mr. Egan came to Tulsa in November, 1921, from Pittsburgh, where he had been managing editor of the Pittsburgh Dispatch and had served also as political editor. He served as director of a number of political campaigns in Pennsylvania.

During the war Mr. Egan achieved many honors as a result of his work in this country and in Belgium, France and Italy in connection with the war activities of the Knights of Columbus.

The French government decorated Mr. Egan as a result of his association work in that country and Pope Pius XI made him a Knight of St. Gregory the Great, the highest honor the Catholic church can confer on a layman. Duquesne University of Pittsburgh conferred the degree of Doctor of Literature on him in recognition of his war writings and work.

Mr. Egan was a member of the Tulsa Club and Tulsa Country Club. He is survived by Mrs. Egan and one brother, John M. Egan of Oil City, Pa.

Canfield Wins Verdict in Benzol Tax Case

CLEVELAND, Dec. 18.—Canfield Oil Co., Cleveland, has won a verdict in the court of common pleas at Cleveland in an action brought by the state to collect $17,300 which the company had deducted from a payment on gasoline taxes because that sum had been paid as a tax on benzol when benzol was not taxable in this state.

Details of the decision of Judge Carl V. Weygandt will be published in the Dec. 26 issue of NATIONAL PETROLEUM NEWS as this case has important bearing on taxes needlessly paid by oil companies in other states.

Canfield was represented by Chamberlin, Marty & Fuller, Cleveland attorneys.

The stucco building at the Tulsa municipal airport, containing pilots quarters has been finished. It contains showers, a living room, and ten bed rooms. The building has its own steam heating plant.

New License Terms Should Widen Sale of Ethyl Treated Gasoline

By Paul Truesdell
N. P. N. STAFF WRITER

NEW YORK, Dec. 14

THE Ethyl Gasoline Corp. has made three changes in its policy governing distribution of tetraethyl lead treated gasoline, which will tend to facilitate the merchandising over the country of this anti-knock motor fuel.

First—it now permits the marketing of motor fuel treated with Ethyl fluid without insisting that the product be branded Ethyl gasoline. This means that companies hereafter will be able to market gasoline treated with Ethyl fluid under their own brand names alone. Under present contracts distributing companies may use their own names but must also use the Ethyl trademark and display the emblem.

Second—It has reduced the price per cubic centimeter of Ethyl fluid by half, bringing it to 0.5 cent per cubic centimeter. It has at the same time put into effect an additional flat royalty charge of 0.7 cent a gallon on all gasoline treated with Ethyl fluid, regardless of the amount of Ethyl fluid used.

Third—The Ethyl Gasoline Corp. has established a minimum of 0.75 cubic centimeters as the smallest quantity of Ethyl fluid per gallon that shall be used by any distributor. Hitherto, the only requirement has been that fuel marketed as Ethyl gasoline meet a certain standard; there has been no minimum amount of Ethyl fluid specified in the contracts.

President E. W. Webb of The Ethyl Gasoline Corp. stated that the same regulations governing the sale of Ethyl gasoline to the public that are now in force will apply also to the distribution of gasoline containing Ethyl fluid but sold without the Ethyl designation, with the sole exception that the use of the Ethyl trademark will not be required.

The change in the price schedule of Ethyl fluid was effective Oct. 1. The sale without use of the Ethyl trademark will begin as soon as details of the new contract can be worked out.

The action of the company in cutting the price per cubic centimeter of Ethyl fluid, establishing the flat gallonage charge and prescribing a minimum amount of Ethyl fluid that may be used, arose from the desire to establish more equitable opportunities for its licensees to make a fair profit.

Much consideration had been given by the company to the possibility of making a straight reduction in the price of Ethyl fluid but it was decided that this was impractical.

Some of the companies marketing Ethyl gasoline, both large and small, are compelled to use the maximum of 3 cubic centimeters to the gallon, or close to it, in order to bring their gasoline to the standard prescribed by the Ethyl Gasoline Corp. Considering the fact that all companies retail Ethyl gasoline at a premium of 3 cents, it is evident that some marketers of Ethyl gasoline were making a very small profit on it or even showing a loss, under the old price of 1 cent per cubic centimeter for the fluid.

On the other hand, some companies, especially those manufacturing gasoline from California and Smackover crude, were able to use as little as 0.75 cubic centimeters a gallon to bring their fuel to the anti-knock standard required.

An accompanying table shows the relative cost per gallon to the marketers of Ethyl gasoline under the new scale of prices as compared with the old. It will be seen from this table that 1.4 cubic centimeters to the gallon is the dividing line; companies that have been using more than that amount will find their costs reduced under the new schedule, while those who have been using less than 1.4 cubic centimeters will find their costs somewhat increased by the changes.

Schedule of Cost per U. S. Gallon For Mixing ETHYL Fluid with Gasoline

Issued by the Ethyl Gasoline Corp.

Quantity Lead required Cubic Centimeter	Cost of Lead Cents per c. c.	Gallonage Charge Cents	Total Cost of Treating, Cts. Per Gallon New Schedule	Old Schedule
¾	0.375	0.7	1.075	0.75
1	0.5	0.7	1.2	1.00
1¼	0.625	0.7	1.325	1.25
1½	0.75	0.7	1.45	1.50
1¾	0.875	0.7	1.575	1.75
2	1.0	0.7	1.7	2.00
2¼	1.125	0.7	1.825	2.25
2½	1.25	0.7	1.95	2.50
2¾	1.375	0.7	2.075	2.75
3	1.5	0.7	2.2	3.00

In fixing the minimum quantity of Ethyl fluid to be used and the new price structure, the company endeavored to arrange it so as to work as little hardship as possible on any refiners. When the new rule was put into effect there was no refiner mixing Ethyl gasoline who was using less than 0.75 cubic centimeter per gallon.

Mr. Webb made the following statement on the company's change in policy: "We think the concerns which have helped us develop the market for Ethyl should have a reasonable length of time to capitalize their investment and organization effort. This can probably be best accomplished by our issuing new licenses to sell under the Ethyl name sparingly for the next two years or so.

"We have a number of applications at this time for licenses both under the Ethyl brand and applicants' selected brands. Some of these are in Standard of Indiana territory. We anticipate licensing these applicants under the Ethyl brand and otherwise, but we expect to be sparing in our licenses to use the Ethyl brand in Indiana territory as well as elsewhere —certainly for a reasonable period of time.

"Some companies have indicated from time to time their desire to sell under their own brands without the Ethyl trademark and this change will enable them to do so.

"HOWEVER, all licensees, irrespective of brand, must sell under the same kind of contract except as to name—that is to say—all provisions of the Ethyl licenses will apply to those selling under their own brand without the Ethyl name.

"The salient features of our agreement covering both classes are: 1, same price; 2, same requirement as to minimum standard of quality; 3, same notice on the pump that it contains lead and is to be used as motor fuel only; 4, uniform color—our present Ethyl color."

It seems likely that this change in policy of the Ethyl Gasoline Corp. may lead additional companies both large and small to take on the mar-

keting of Ethyl gasoline. It is known that a good many companies are averse as a matter of policy to marketing any product that bears any other than their own brand name.

There are a number of gasolines on the market that have anti-knock value in widely varying degree. There is no approach to uniformity. It seems fair to assume that this move by the Ethyl Gasoline Corp. will go a considerable distance in establishing uniformity in anti-knock fuel because gasolines now finding a sale as anti-knock can in many cases be brought up to the Ethyl standard by the addition of the minimum quantity of Ethyl fluid prescribed in the regulation. It is probable that any step toward establishing uniformity in the anti-knock value in motor fuels marketed over the country would be exceedingly pleasing to automobile manufacturers.

These manufacturers have been up against the problem, in designing their engines, of taking as great advantage as possible of the benefit to be derived from high compression pressures, while at the same time not increasing the pressures to the point that satisfactory fuels might be hard to get.

Some automobile manufacturers the past year have slightly reduced the compression ratio of their engines from the peak they had reached, presumably they had reports of troubles from the engine, in certain localities where a fuel sufficiently high in anti-knock value could not be readily obtained.

THE Standard Oil Co. of Indiana has exclusive right to market Ethyl gasoline in its marketing territory until March, 1929. Statements of policy of the Ethyl Gasoline Corp. in this article, as they apply to Standard of Indiana territory, refer to the time when the exclusive Standard of Indiana contract has expired.

Another assumption that would seem fair to draw from the change in policy of the Ethyl Gasoline Corp. is that refiners are steadily improving the anti-knock quality of their motor fuel and further improvement is expected. In fact, this is admitted.

When tetraethyl lead was brought out 3 cubic centimeters per gallon was the amount prescribed by the Ethyl Gasoline Corp. as necessary to bring the average motor gasoline then being marketed to equivalency in anti-knock value with a blend of 40 per cent benzol with 60 per cent Mid-Continent gasoline.

The amount of tetraethyl, or Ethyl fluid, necessary to bring the average gasoline produced today to the same anti-knock standard is just under 2 cubic centimeters to the gallon and it is probable that further improvements in refining practice will later reduce this requirement to around 1 cubic centimeter to the gallon.

There are now about 35 refiners licensed to mix and distribute Ethyl gasoline. Hundreds of distributors are marketing Ethyl gasoline to the public in every state of the Union. Only refiners are allowed to mix Ethyl fluid with gasoline. The design of the mixing plant and the conduct of mixing operation is controlled by rules of the Ethyl Gasoline Corp. The corporation however leaves it pretty much to the honesty of the refiner to report on his mixing operations.

The Ethyl Gasoline Corp. issues to each refiner a book of certificates made up like a check book. Each certificate is serially numbered and attached to a stub. A certificate is filled out by the refiner monthly and sent in to the Ethyl Gasoline Corp. This report gives the amount of gasoline mixed during the month, percentage of lead used in each batch and the amount of Ethyl gasoline shipped out. The certificate is signed by the manager or superintendent of the refinery and is attested by the auditor or treasurer of the company.

Compression Ratios of Automobiles

In February, 1927, the average compression ratio of motor cars was 4.61 to 1. Twelve models, or 14 per cent, had a compression ratio of 5 to 1, or higher. In July, 1928, the average compression ratio, excluding optional high compression ratio heads, was 4.94. Fifty-four models, or 56 per cent, had a compression ratio of 5.1 or greater.

Car Make and Model		Compression ratio to 1 Feb., 1927	July, 1928
Auburn	6-66	5	4.79
Auburn	8-77	5.0	5.15
Auburn	76	.....	5.05
Auburn	8-88	5.0	5.15
Auburn	115	.....	5.25*
Buick	120 & 128	4.31	4.30
Buick	115	4.79	4.79
Cadillac	314	4.75	.....
Cadillac	.....	.....	4.90*
Case	Y	4.3	.....
Case	JIC	4.2	.....
Chandler	Std 6	.....	.....
Chandler	Big 6	.....	5.00
Chandler	Spec 6	.....	5.00
Chandler	Inv. 6	.....	5.00
Chandler	Str 8	.....	.....
Chandler	Ryl 8	.....	5.00
Chevrolet	AA	4.3	.....
Chevrolet		.....	4.50*
Chrysler	50	4.1	.....
Chrysler	60	4.9	.....
Chrysler	65	.....	5.00*
Chrysler	70	4.8	.....
Chrysler	75	.....	5.00*
Chrysler	80	4.8	6.00
Cunningham	.....	4.26	4.26
Davis	94-27	5.0	.....
Davis	92-27	4.44	.....
Davis	99	.....	5.10
Diana	Str 8	4.66	.....
Dodge Bros.	.....	4.0	.....
Dodge Bros.	Std. 6	.....	5.18
Dodge Bros.	Vict.	.....	5.18
Dodge Bros.	Snr	.....	5.26
Dupont	E	4.5	.....
Durant	4 Star	.....	4.20
Durant	55	.....	4.79
Durant	65	.....	5.4
Durant	75	.....	5.4
Elcar	6-70	4.9	4.90
Elcar	8-90	5.0	.....
Elcar	8-82	4.9	4.90
Elcar	8-78	.....	4.94
Elcar	8-91, 92	.....	4.87
Erskine	Supr 6	5.0	.....
Erskine	.....	.....	4.87
Essex	6	.....	.....
Essex	Super 6	.....	5.26
Falcon Knight	.....	4.6	.....
Falcon	12	.....	5.50
Flint	Z-18	4.78	.....
Flint	60	4.44	.....
Flint	80	4.24	.....
Ford	T	3.6	.....
Ford	A	.....	4.22
Franklin	11-B	4.43	.....
Franklin	Airman	.....	4.40
Gardner	6B	4.5	.....
Gardner	80	5.0	.....
Gardner	90	5.0	.....
Gardner	8.75	.....	5.10
Gardner	8-85	.....	5.10
Gardner	8-95	.....	5.25
Graham Paige	610	.....	5.43
Graham Paige	614	.....	5.45
Graham Paige	619	.....	5.15
Graham Paige	629	.....	5.15
Graham Paige	835	.....	5.50
Hertz	D-1	4.5	.....
Hudson	Super 6	.....	.....
Hupmobile	A-1	.....	.....
Hupmobile	A	.....	5.00
Hupmobile	E-3	.....	.....
Hupmobile	M	.....	.....
Jordan	J-1	4.65	.....
Jordan	R	.....	5.08
Jordan	8JE	.....	5.05
Jordan	AA	4.69	.....
Jordan	R	.....	.....
Kissel	6.55	4.9	.....
Kissel	8-65	.....	.....
Kissel	8-75	4.5	.....
Kissel	6-70	.....	5.15
Kissel	8-80S	.....	5.15
Kissel	8.80	.....	5.15
Kissel	8-90	.....	4.50
Kleiber	1927	4.2	.....
Lincoln	8	4.81	.....
Lincoln	.....	.....	4.81
LaSalle	.....	.....	4.80*
Locomobile	8-80	.....	.....
Locomobile	8-70	.....	5.10
Locomobile	8-80	.....	5.00
Locomobile	48	4.25	.....
Locomobile	90	4.25	.....
Locomobile	8-66	4.65	.....
Marmon	E75	4.34	4.34
Marmon, Little	.....	5.27	.....
Marmon	68	.....	5.25
Marmon	78	.....	5.50
McFarlan	Str. 8	5.0	.....
McFarlan	TV	4.5	.....

Car Make and Model	Compression ratio to 1 Feb., 1927	July, 1928
McFarlan 8	.....	5.25
McFarlan 6	.....	4.50
Moon 6-60	4.78	.....
Moon Series A	4.65	.....
Moon 6072	.....	4.94
Moon 8-80	.....	5.10
Nash Light 6	4.5	.....
Nash Spec 6	4.69	5.00
Nash Adv. 6	4.6	5.00
Nash Std 6	.....	5.00
Oakland 6	4.8	.....
Oakland AA6	.....	4.80
Oldsmobile 30 E	4.7	.....
Oldsmobile	.....	5.20
Overland 4 Whippet	.....	.....
Overland 6 Whippet	.....	.....
Packard 6	.....	.....
Packard 8	.....	.....
Packard 526	.....	4.80
Packard 533	.....	4.80
Packard 443 Std 8	.....	4.73
Paige 6-45	4.54	.....
Paige 6-65	4.68	.....
Paige 6-75	4.68	.....
Paige 8-85	4.82	.....
Peerless 6-60	.....	4.55
Peerless 6-80	.....	4.55
Peerless 6-90	.....	.....
Peerless 6-72	.....	.....
Peerless 8-69	.....	4.55
Peerless 6-91	.....	4.55
Pierce Arrow 80	4.35	.....
Pierce Arrow 36	4.35	4.45
Pierce Arrow 81	4.65	.....
Pontiac 6	4.6	.....
Pontiac 6-28	.....	4.90
Plymouth	.....	5.00
Reo A	4.8	.....
Reo Wolverine	.....	4.80
Reo Flying Cloud	.....	4.80
Rickenbacker 6-70	4.76	.....
Rickenbacker 8-80	4.76	.....
Rickenbacker 8-90	4.76	.....
Roamer 8-78	5.0	.....
Roamer 8-88	5.0	.....
Rolls Royce	4.0	.....
Star 4	4.2	.....
Star 6	4.79	.....
Stearns F6-85	4.7	.....
Stearns Knight 80	.....	5.00
Stearns Knight F6-85	.....	5.00
Stearns G 8	4.5	.....
Stearns Knight HJ	.....	5.00
Stearns Knight G 8 85	.....	5.00
Studebaker Std. 6	4.5	.....
Studebaker Spec 6	4.25	.....
Studebaker Big 6	4.25	.....
Studebaker Dic	.....	4.50
Studebaker Com	.....	4.50
Studebaker Pres.	.....	4.70
Stutz AA	5.0	.....
Stutz BB	.....	5.00
Velie Std 50	4.7	.....
Velie Spec. 60	4.7	.....
Velie 50	.....	4.50
Velie 66	.....	4.50
Velie 77	.....	4.53
Velie 88	.....	5.15
Wills Ste. Claire T6	.....	.....
Willys Knight 66-A	.....	.....
Willys Knight 70 A	.....	.....
Willys Knight 56	.....	5.50
Willys Knight 70	.....	5.50
Willys Knight 66	.....	5.00
Whippet 96	.....	5.00
Whippet 98	.....	4.44

Note. Numerals designate models as to optional high compression ratio heads.

As soon as the hangar at the Tulsa municipal port, which is fast nearing completion is finished, work will be started on a second, 100 feet to the north of the first one.

Tammany Chief Expected to End New York Tank Monopoly

NEW YORK, Dec. 17

GEORGE W. OLVANY, chieftain of Tammany Hall, who returned Dec. 16 from France, is expected to end the New York gasoline tank truck monopoly which is held by the Tank & Accessories Corp., a selling organization in which William F. Kenny, Governor Smith's chief backer in the recent presidential campaign, and Kenny's brother, James A.

Pending a conference among Olvany, New York city officials, and persons interested in the gasoline truck tank and cab situation, a temporary injunction restraining the New York Fire Department from approving for sale any more Kenny tanks is in force. The temporary injunction was issued Nov. 26 on motion of the Smith-Hamburg-Scott Welding Co., and a final hearing on this company's plea for a permanent injunction was to have been held in the Supreme Court of New York county, Dec. 6. This hearing was postponed on request of the corporation counsel of New York until after the return of "The Boss."

It is expected the conference will result in a revision of the New York tank and cab specifications in which will be inserted this clause, "the like or as good." Government specifications usually contain this clause so as not to give any person or corporation a monopoly in case of patented articles. In New York, the specifications were written around the patented features of a truck tank and a truck cab the selling agencies for which the Kennys acquired about the time New York permitted the bulk delivery of gasoline.

With the defeat of Smith for the Presidency, it is said that Tammany lost interest in Kenny and is willing to abide by the city's laws now. It had been charged in the application for the injunction against the Fire Department which must pass on each gasoline truck tank sold for use in this city, that the specifications were illegal because they stifled competition by being built solely around patented articles.

The Smith-Hamburg-Scott tank got so far as to get a test by the Fire Department. Although this tank withstood all safety requirements it could not get the city's approval. The defeat of Smith caused a shifting of factions in Tammany, it is said, and it is now expected that "Boss" Olvany will allow the Fire Department to revise the specifications to conform with the city's ordinances.

The Smith-Hamburg-Scott company has been luckier than some other tank manufacturers who have been unable even to get the city's officials to look at blueprints. Such has been the case with the Davis Welding & Mfg. Co. of Cincinnati, which for three and a half years has been unable to get any response from the New York officials, although Augustine Davis, Jr., has carried the fight to Smith himself, who would not even answer Mr. Davis's letters.

The Smith-Hamburg-Scott company is the only company that has carried its fight for recognition into court. Through its attorney, Congressman John J. O'Connor of New York, it filed the injunction suit Nov. 26 seeking to restrain the Tank & Accessories Corp. from selling more tanks in New York while it had a monopoly, and also a mandamus action asking the court to compel the city to approve its tank which met all safety requirements but could not meet the patented features.

Higher Compression Ratio Trend Reported Halted

CLEVELAND, Dec. 15. — Fred Kingsbury, automobile editor of the Cleveland Plain Dealer, told members of the Western Reserve Petroleum Club here Dec. 14 that the trend in automobile engine design was no longer for higher compressions. However, he said, one of the leading experimental laboratories was working on motor fuels, to what end he had been unable to ascertain.

Mr. Kingsbury said that the automobile manufacturers that are equipping their product with oil filters are urging changes of filter cores at lower mileages than when the filters were first introduced. He said that he understood that soon the recommendation for changes would be placed at 8000 miles instead of 10,000 miles as at present. He suggested that oil companies might make money in selling these cores and keeping track of when the core should be changed in their customers' cars.

Continental Buys Holding

(By Telegraph)

TULSA, Dec. 17.—Continental Oil Co., has purchased the holdings of the Union Oil Co., of California in Rocky Mountain territory. It is understood that all acreage proved and wildcat was included in the deal.

The Union produces in this territory only at Fort Collins, in northern Colorado, where daily output is between 2200 and 2300 barrels daily. It has developed some production at Maverick Springs, Wyo., of heavy asphalt base oil.

Review of Late Production News

AN INCREASE of 16,000 barrels in daily average production of crude in Santa Fe Springs, Calif., was chiefly responsible for the 25,950 barrel increase in the country's total daily average output for the week ended Dec. 15. Production was at the rate of 2,546,800 barrels daily average, according to the American Petroleum Institute.

Crude oil imports were at the rate of 234,429 barrels daily average during the past week, compared with 285,000 barrels daily average the week ended Dec. 8. Total new crude supply was 2,781,229 barrels for the week ended Dec. 15, compared with new supply of 2,805,850 barrels the previous week.

The Little River field in Seminole area continued its downward trend, that area falling off 9900 barrels in daily average during the past week. Miscellaneous fields in Oklahoma gained 4650 barrels. St. Louis pool increased 5800 barrels.

Champagnolle, Ark., field decreased 2250 barrels. No large changes occurred in any of the Texas fields.

Oklahoma-Kansas

DEEPENING of the Indian Territory Illuminating Oil Co., wildcat in the SE SE of 24-11N-3W, near Oklahoma City, to a depth of 6405 feet doubled the production. It amounted to 95 barrels, the first 15 minutes after deepening. This rate was not maintained for any very considerable time, 6000 barrels per day being about the average since that time. The well has since been deepened to a new total depth of 6413 feet without increasing the output.

A caving hole and lack of sufficient facilities for handling the oil kept the Marland Production Co. No. 1 Goodrich, in the SW NE SW of 16-25 S. 1 E., Sedgwick county, Kans., from being exploited fully. Production is kept to about 50 barrels per hour at the present time.

What appears as a new productive spot not three-quarters of a mile north of the Wilcox discovery wells in the St. Louis pool is being tested by T. B. Slick. His No. 1 Davis in the SW NW NE of 18-7N-5E is making about 40 barrels hourly from the Wilcox topped at 4097 feet. There are several Wilcox sand dry holes nearby, the closest being a direct east offset.

California

A 450-BARREL well was completed last week in the Hawthorne area, southern California, giving this area its second producer. The well is making 33 gravity oil and is 5906 feet deep. This well is surrounded by small tracts.

Associated Oil Co.'s Cypress No. 3 has been completed in the Potero field for 840 barrels of 46.3 gravity oil at 3880 feet, giving this field its second producer. Most of the best looking acreage in this field is held by this company.

Three late completions at Santa Fe Springs showed water on production tests and will have to be worked over. Five good wells were completed last week for an average of 2580 barrels each. Geo. F. Getty's No. 17 is making 6200 barrels. This is the well that burned so long. Universal Consolidated's O'Connell No. 3 is the best in the field flowing 6400 barrels a day from the deep zone. Wilshire Oil Co. is erecting thirteen 170,000-barrel steel tanks to take care of its expected production.

Fourteen locations had been made late last week for new wells at Ketleman Hills and that many more locations are expected in the next two or three weeks. General Petroleum completed its new pipe line into the field.

Wyoming, Montana

W. L. WALLS made the highest bid for the government's royalty oil in the Salt Creek field, 42 cents above the posted field price. Walls formerly was attorney general of the state.

Ohio Oil Co.'s well on the Shoshone structure, three miles east of Cody, Wyo., has 3300 feet of black oil standing in the hole. The well is being drilled into the Embar-Tensleep where the big production is found in the Oregon Basin field.

Midwest Refining Co. is to drill the well located on the Frannie structure by the original promoters, Kirk and Peters. It will also drill a well on its own acreage on that structure, in Park and Big Horne counties, extreme northern Wyoming.

Producers and Refiners Corp. are drilling the fifth of their 20 projected diamond drill tests in the O'Brien Springs district in the Little Lost Soldier area.

In Lea county, New Mexico, the Midwest Refining Co. has announced another test for its Farnsworth lease.

Texas, New Mexico, Louisiana

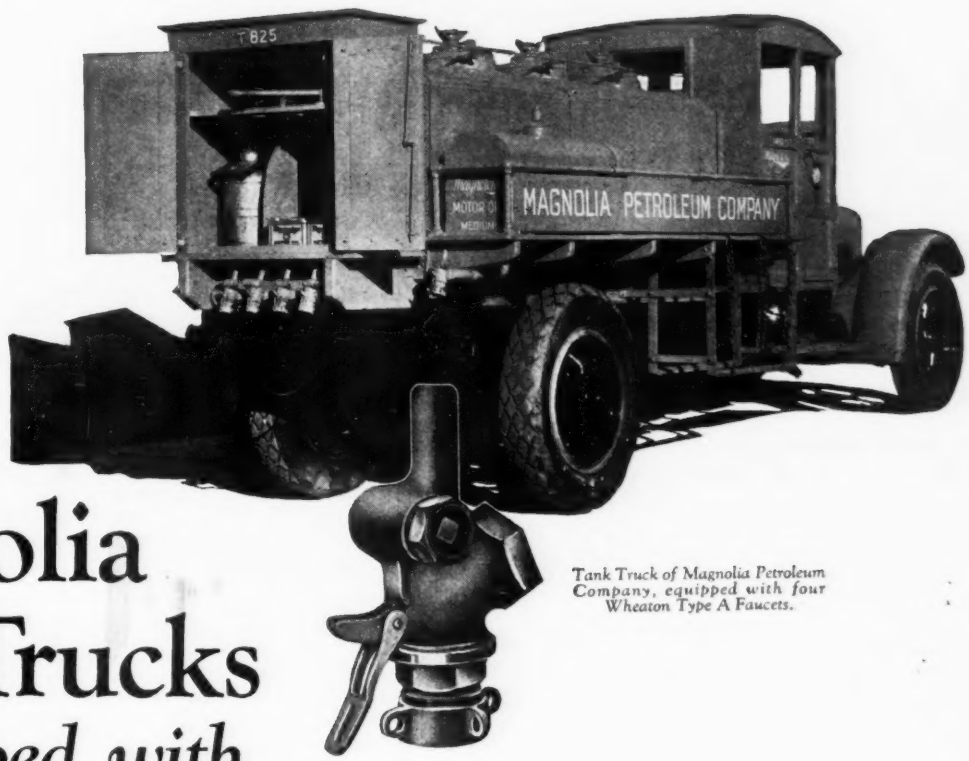
EXCEPT for another sensational well—an old producer deepened—in the Yates pool of Pecos county, developments in West Texas were chiefly routine in character.

The Mid-Kansas Oil & Gas Co. and Transcontinental Oil Co.'s No. 8-C Yates, Sec. 60, Block 1, I.&G.N. survey, near the east limit of the pool was deepened from its old producing level of 602 feet to total depth of 983 feet. It made 4441 barrels in one hour and was then pinched to conform to the prorata schedule of the lease. Originally the well had initial production at its shallower level of 2830 barrels in 24 hours.

Near the known water line, the well is interesting chiefly for its size and as an indication of the potentialities of this pool. It is not the largest well that has been completed in the Yates pool. The same operators some time ago completed one that made in excess of 6000 barrels in one hour.

A wildcat test in Ward county, Texas, which has been closely watched is apparently a failure. Prairie Oil & Gas Co.'s No. 1 Sealy Ranch, near the Ward-Winkler county line, has a hole full of water at 3286 feet. It is in the center of the SW quarter of Sec. 95, Block A, G&MMB and A. survey. It is about 15 miles south and east of the Hendricks pool of Winkler county. Several weeks ago gas estimated at four to five million feet daily was found at the 2700-foot level.

An extension to the Strawn sand pool in Jack county, Texas, or a new pool, was opened by Leidecker and others in the Hughson survey. The Panhandle Refining Co. has three wells making about 400 barrels daily and the Leidecker well is some two and one-half miles north and east. It found top of the pay at 3167 feet and at seven feet in the sand made 22 barrels per hour.



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Wheaton

Repressuring Proposed to Increase Archer County, Texas, Yields

By Paul Wagner
N. P. N. STAFF WRITER

INCREASED production averages and higher ultimate yields are offered oil operators in the Archer county division of the greater Wichita Falls district through the restoration of pressure to the shallow pay sands.

Other methods that also offer possibilities for increasing the oil recovery and reducing operating costs include:

(1)—Reduction of water lifted.
(a) Bottom-hole plugging.
(b) Correcting faulty shut-offs and adjustment of depth of water strings.
(2)—Shooting to increase production.
(3)—Underreaming, cleaning-out and deepening.
(4)—Washing wells with reagent or hot oil.
(5)—Increase in size of pumping equipment.

Recommendations for such work are contained in an engineering report on the Texhoma-Gose pool, Archer county, by Chase E. Sutton, Carrol J. Wakenut and H. B. Hill of the United States Bureau of Mines, in cooperation with the North Texas Geological Society, Wichita Falls.

The Texhoma-Gose pool is one of the largest of the approximately 35 shallow sand fields, totaling about 7000 productive acres, in Archer county. It was selected for engineering study because of the completeness and accessibility of well records and production data.

All the oil produced in the field has come from Cisco series beds of sandstone, shale and limestone, representing the youngest Pennsylvanian age formations in north Texas. The main pay in the field is found at 1580-1620 feet, drilling depth, or from 1300-1400 feet below the top of the Cisco. Surface elevations in the proved area range from 1034-1080 feet above sea level.

The mixed paraffin and asphalt base, green oil produced in the field is typical of the high gasoline content crude produced generally in the Wichita Falls district. Gravity is uniform throughout the field, averaging 39 degrees to 40 degrees, A.P.I.; the crude yielding 36 to 43 per cent gasoline by volume.

Relatively high market prices for the oil as compared with "sour crudes" of other regions make desirable the practice of the best engineering methods available for recovery of the maximum content of the sand reservoirs.

The shallow sand penetration of the majority of the wells in the field (5.4 feet average) limits the possibility of bottom-hole plugging, according to the engineering report. It does appear to the authors, however, that some benefit would result from careful plugging work in specified wells.

They found that less than 15 per cent of the wells drilled had the water string cemented, which suggested that some of the water is due to casing seats. Remedial work will often correct such leaks.

It was also noted that in a number of wells the casing had been set several feet above the top of the pay sand. The intervening formation is logged in some wells as sand, sandy shale and sandy lime. If adjoining wells are cased below these exposed formations and the shut-off takes place at the shoe, it is held possible upper water is migrating through the sandy beds in which the formations are open.

Results obtained by shooting, and the apparent lack of its use in the Gose sand, suggest this method is not generally practical. The pay sand being loose and of no great thickness a disadvantage is worked on shooting practice.

It is suggested, however, that possibly some of the wells completed in a hard, tight, limey sand, and with a sand penetration of 10 to 20 feet, could be shot advantageously with light shots.

Although some success has attended use of underreamers in other fields of Archer county, no attempts have been made to increase Texhoma-Gose production by this method.

The system consists of running an expanding tool into the well and rotating it opposite the pay sand. The principle of the device is to enlarge the hole by scraping the walls.

Sand has caused little trouble in the field, hence cleaning out jobs are seldom necessary. Except in the case of future shooting or underreaming it is believed that cleaning out practice will add little to oil recoveries.

It is suggested that some of the wells that found the Gose sand at subsea depths of 520-530 feet below sea level, and that have a sand penetration of two to five feet, could be carefully deepened two or three feet with favorable results.

One well in the field was washed with treating reagent in attempt to increase production. Three gallons of the reagent were placed in the well and circulated several hours. A considerable quantity of sand and b.s. were removed from the well and after being placed on the pump it shortly sanded up. The well was taken off production, cleaned out and put back pumping.

The record of the work showed 17¾ barrels water and 5 per cent b.s., with 12¾ barrels of oil before introducing the reagent. Ten days later the oil production was the same, but the water lifted totaled 30¼ barrels, no b.s.

INCREASE of water, although not desirable from a production standpoint, indicates the reagent had a cleansing effect on the sand; leading the engineers to suggest the results warrant further experimental work.

A few wells in the field are pumping between 75 and 100 barrels of fluid daily. Actual displacement of a 2-inch pump, using 90 per cent of the stroke (measured at the polish rod) as effective and at a rate of 12

Estimated original oil content, percentage recovery and future production, Texhoma—Gose Pool[1]

Proved area (acres)	612.6
Average sand thickness (feet)	7.0
Volume of sand reservoir (cu. ft.)	186,793,992
Average porosity (per cent)	21.35
Volume of pore space (cu. ft.)	39,870,517
Original content (100 per cent saturation and all pore space effective) (barrels)	7,101,980
Total recovery to Jan. 1, 1927 (barrels)	2,792,172
Per cent recovery to Jan. 1, 1927 (barrels)	39.3
Estimated future production under present methods	514,915
Estimated ultimate recovery (per cent)	46.5

1—United States Bureau of Mines Engineering Study of Texhoma—Gose pool, Archer County, Texas.

strokes a minute, is only slightly more than 100 barrels in 24 hours.

As the efficiency of an oil well pump is constantly decreased with wear, the suggestion becomes tenable that 2-inch pumping equipment may not be large enough to handle the fluid most efficiently.

The report devotes special attention to the restoration of pressure as warranting primary consideration. It points out, however, that any operator considering the introduction of air or gas to his property should realize that up to the present time more publicity has been given results in successful fields than to areas where failures have resulted.

After referring to recovery data reproduced in an accompanying table, the engineers say the proportion of oil in the reservoir that is recoverable by repressuring methods is uncertain; however, if 10 to 20 per cent is recovered in addition to probable production under present operating methods it is evident the venture should prove profitable.

There being no earlier history of repressuring in the area on which to base conclusions, except in southern Archer county,[1] the engineers confine their other suggestions to fundamental practice discussions.

1—Foran, E. V., NATIONAL PETROLEUM NEWS, page 53, Feb. 29, 1928.

Largest Diesel Tanker Loads 120,000 Bbls.

LOS ANGELES, Dec. 15.—The M. V. "Brunswick," of 13,000 tons deadweight, equipped with up to date Diesel-electric system of propulsion, the largest tanker of its type afloat, loaded a cargo at the Union Oil Co.'s dock in Wilmington Dec. 16 for the Antipodes.

The big tanker is the latest addition to the Atlantic Refining Co.'s fleet and is being put into service between Los Angeles, New Zealand and Australia by the Atlantic Union Oil Co., Ltd., jointly controlled by the Atlantic Refining Co. of Philadelphia and the Union Oil Co. of California.

The "Brunswick" has a capacity of 120,000 barrels of refined oil, 6000 barrels diesel bunkers, storage space and equipment for handling package goods, case gasoline, kerosene and lubricants. The big vessel can be entirely controlled from the bridge by one man by simply manipulating a single master control lever. The electric propelling motors can be started, stopped or reversed at will. Steering is also automatic.

Four full diesel engines of 750 horsepower each, driving 600 kilowatt generators provide the electric power to propel the vessel at a speed of 11 knots.

Gas and Air Lift in Oil Production

In 40 articles since the first of the year NATIONAL PETROLEUM NEWS has told of the use of air, gas and water in increasing oil recovery, application methods, and of restoring pressure to old pools.

Here they are for your file reference:

1928

Unit repressuring effects savings Dec. 5, p. 65

Repressuring in Burmah fields Dec. 5, p. 62

Gas-oil ratio of 5000 ft. for Misener sand Nov. 7, p. 41

Restoring pressure flows wells regularly Nov. 7, p. 27

Back pressuring advised for Santa Fe Springs Nov. 7, p. 42

Santa Fe Springs drafts repressuring plan Oct. 31, p. 36

Repressuring slows down for winter Oct. 24, p. 44

Better use of gas in oil recovery Oct. 24, p. 24

Intermittent injection of gas in gas lift installations Oct. 17, p. 44

Economic effect of gas lift in natural gasoline industry Oct. 17, p. 130

Gas lift raises new problems in depletion Oct. 17, p. 159

Flowing wells against pressure sands in Seminole Oct. 3, p. 56

Early repressuring in Cook pool Oct. 3, p. 26

Repressuring in Lima field Sept. 12, p. 51

Application of gas in plant control Sept. 5, p. 79

Avoiding extra cost in pressure rejuvenation Aug. 15, p. 38

Pressure rejuvenation in Powell-Stove Aug. 1, p. 25

Effect of operating methods on oil recoverable July 25, p. 50

Salt Creek has big gas drive July 11, p. 29

Water flooding not successful in Kane, Pa. July 4, p. 50

Origin and development of water flooding May 30, p. 59

Intermittent use of gas lift economical May 30, p. 69

Recovery of natural gasoline at gas lift plants May 23, p. 98

Gas lift in relation to natural gasoline May 23, p. 97

Results of pressure recovery in Bradford May 23, p. 25

Eastern field operators discuss repressuring May 23, p. 23

Repressuring oil sands May 16, p. 85

Fluid displacement pump used with gas lift Apr. 23, p. 100

Repressuring causes gasoline plants to close Apr. 11, p. 51

Effect of modern production methods on natural gasoline Apr. 4, p. 17

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Repressuring against 1500 pounds at Seal Beach Feb. 29, p. 23

Effect of repressuring during flush stage Feb. 29, p. 53

Repressuring during flush life of pools Feb. 29, p. 23

Air lift brings new hazards Feb. 22, p. 26

No general repressuring in Seminole yet Feb. 15, p. 85

Air lift results in Bristow Feb. 8, p. 52

Gas lift justified by speed of recovery Feb. 8, p. 47

Residue gas generates current for pumping wells Feb. 1, p. 75

Repressuring with volume controllers Jan 18, p. 87

Back copies of any of the above issues are 25c a copy. On issues that are exhausted, photostats will be furnished at 40c per page.

Libraries in the larger cities generally keep back files of NATIONAL PETROLEUM NEWS complete.

National Petroleum News

Main Office: 1213 West Third St.

Cleveland, Ohio

The Continental Supply Company

The Editors' Viewpoint

National Petroleum News

Definition of "Tank Wagon Market" Changes

JOBBERS considering contracts for their gasoline supply based in any way upon the tank wagon market, any territory, should give particular heed to the changes in the gasoline price structure taking place over the country.

The larger marketing companies are putting into effect price structures which more nearly represent actual prices to various classes of gasoline buyers. One company's idea of the suitable price structure for its own territory will not be the same as that of some other company, in another territory, perhaps even in the same territory. Some companies will likely announce their new schedules so the entire industry will know about them. Others will put them into effect and let their competitors and the rest of the trade find out as they may.

At least some, probably the majority, of these new price structures are going to get away from the "posted" and, in several territories at least, more or less fictitious tank wagon prices of the past, from which concessions were made locally, or over a wider territory, to meet prevailing conditions of competition.

Two companies which have announced new price schedules recently—Standard of Ohio and Atlantic Refining Co.—now call their tank wagon market a price 1 cent under their service station price, and both companies recognize fixed discounts under this price to dealers. The Standard Oil Co. of Indiana, in its new Quantity Discount Agreement schedule announced some months ago, completely divorced its tank wagon price from fixed relationship to its service station price of gasoline.

With these changes coming about marketers in discussing the tank wagon markets for gasoline contracting or other purposes should have clearly in mind just what the term "tank wagon market" means now in their own territory. More companies are coming to base their marginal contracts on the posted service station price, a more logical basis for contracts and certainly one that can be more definitely established.

NATIONAL PETROLEUM NEWS is being asked now, since these new price schedules have been announced, to define and interpret what the "actual" tank wagon market is in certain territories. This seems clearly not within the province of this publication as a price reporting agency.

In the first place this publication has always carried in its tank wagon markets the prices officially given it in writing by the principal marketing company in the territory and has carefully shown its prices as such. To do otherwise would have necessitated it compiling actual records, through its own staff, of tank wagon sales in every point for which it quotes a price, obviously an impossibility.

To attempt to quote an actual price now would not only call for an even closer actual inspection of all sales from the tank wagon at every point, but it would also demand first agreement from the industry as to just what class of gasoline business tank wagon sales covered. It is doubtful if any definition the industry generally, or any agency, could set up, would have more weight than the definition by the principal marketing company issuing the price schedule.—V. B. G.

Displaying "Alcohol"

DENATURED alcohol, according to a ruling of the United States department of Internal Revenue, has to be called "Denatured Alcohol" in advertisements on signs and posters, and not simply "Alcohol." So as winter comes on and oil men begin stocking denatured alcohol at filling stations it behooves them to watch that technicality.

It is against the law to print the word "Alcohol" on the window of an oil station, all by itself. Plain white cards with the unqualified word "Alcohol" on them must not be used. It may save a lot of inconvenience to remember always to refer to "Denatured Alcohol" by its full name, especially in advertising.—W. K. H.

New Highways Mean More Gallons

WHAT some of these new highways may mean to the oil industry may be indicated by two experiences of the writer in the past few months.

This last summer we made New York City from Cleveland (590 miles including several hundred towns) in two days—in fact beyond and in the rain—due to a motor highway on which you could go the limit of the car. When there was a sign at a curve that said "caution" it was advisable, but not necessary, to pull down to 45 miles an hour, and when there was no sign you could hit that curve at whatever the car had.

We got into a bad jam of traffic about 90 miles from New York. It was raining. We poked along in low gear for many a mile—one stretch we did a mile in an hour. And then we hit a super highway that would take care of six cars abreast. It was cut right over the mountains in New Jersey and there are some real mountains there—of the Ozark type—and the traffic would spread out so you could hardly see the car ahead. The open six-car highways were not all the way to New York but we saw enough of them to know what they will do.

The next experience was at Columbus, O. for the Ohio State-Princeton football game a few weeks ago. There were 80,000 people at that game. Fourteen special trains were run to it from all parts of the state.

We parked, for comfort's sake, six blocks away from the stadium and thought we were doing well, because there was just enough room at the place we parked to hold our short car. Many a football enthusiast parked farther away.

It took us a half hour to walk to our parking place after the game. We had visions of not getting out of Columbus for several hours. But we turned from that parking space, onto a six-car highway going North to

Cleveland and did not find enough cars to rival a decent traffic jam going from the office to our home. We went to Cleveland, which had supplied most of that 80,000 crowd by train and automobile, in perfect comfort.

The oil industry, as a whole, probably has no idea of the tremendous mileage of new roads which have been built on a big traffic basis over the country. The East, at least, is full of them even though they may be only partly finished. When they are finished the gallons of gasoline *per hour* will be a new factor in the automobile and gasoline business. Every one thinks today of *miles per gallon*. But tomorrow they will think of gallons per hour. And that will mean more gasoline than we in the oil industry have been thinking of.—W. C. P.

Improving Public Relations

ONE oil company's budgeting of its sales and advertising expense for 1929 sets aside a definite appropriation which it can call upon to purchase the booklets in process of preparation by the public relations department of the American Petroleum Institute. These are for distribution to oil company employes, stockholders and to the public through gasoline stations.

These booklets are the best material which has been gotten out to tell the story of our industry to the public and to its own employes. Through publishing in big lots the cost to the oil company, which includes only the institute's cost of printing, is far less than the individual company could possibly have this material prepared.

What has handicapped the oil company distribution of this material, in a good many cases at least, is the fact that special appropriations frequently had to be made to pay for the material, which involved red tape in the large companies and the possibility of the proposition being turned down somewhere along the line by some oil company officials not fully acquainted with the nature of the material.

Plans of Leonard M. Fanning, director of the public relations work of the institute, call for the issuing of material in 1929 which cannot fail to make a favorable impression on the public of the oil industry's work if it receives sufficiently wide distribution; and, of course, the machinery for distribution is set up and ready through the gasoline stations.

For example, four four-page folders, illustrated, will be prepared on gasoline. Early in the year one pamphlet will be ready on "Simple Precautions Make Gasoline Safe," surely a worthwhile message to carry to the public. In the spring another will be ready on "My Gasoline Tax Bill"; later one on "Gasoline the Cheapest Commodity"; in the fall one on "How Gasoline Gets to You."

This department of the institute will soon have ready for distribution, an eight-page pamphlet showing the growth, scope and essential character of our industry, which is best used when distributed with company financial statements. It also has ready a 30-page booklet, prepared especially to be read by employes, on "Information and Your Job," helpful in stimulating in the employe's mind a desire to know more about the business of which he is a part, as a step in his own progress.

Oil companies would do well to make provision by which their sales and advertising managers can secure these booklets quickly after they are ready for distribution. If you are not familiar with this work of the institute, write the public relations department for samples of the material they have already issued.—V. B. G.

We Shouldn't Cut Our Own Throats

WHILE the condition of the tank wagon and service station markets over the country is reported as good on the whole, nevertheless conditions are not 100 per cent as is shown by the report of the Wisconsin Department of Markets of Nov. 1. That department lists 21 Wisconsin towns where there are price cuts of a half cent or more below the price of most of the companies.

Presumably these cuts are being made by men with comfortable guarantees on their marginal contracts with refiners. If so, those marketers are offering the most tangible evidence possible, that they don't need all of their margins and that the refiner, if he wishes to protect the rest of his customers, should discontinue such margins. In other words, these marketers are just cutting their own throats.

The refiners are basing their new contracts on the open spot tank car market and the only guarantee of protection is that when the margin gets below 3½ cents per gallon, the difference will be divided 50-50 between the refiner and the jobber. Refiners report that they are having no difficulty writing these contracts.

There is no doubt that the situation the country over, is cleaning up rapidly and it is a great deal better than several months ago, but it ought to be cleaned up a full 100 per cent and there is no reason why it shouldn't be.

It is up to every individual marketer to stop at once all his past bad practices and he may find it absolutely necessary to do that if he wants to make any profit next year.—W. C. P.

Fighting for Profits, Not Gallonage

SOME oil marketers are still railing away at their lack of a wide margin as in the past few years and are devoting all their energy to get a lower price from the refiners and doing nothing toward eliminating the price concessions that they themselves are giving.

These marketers ask "What's happened to the oil business" and some declare they are going to make the refiner give them a margin or die.

The story is a simple one. The refiners' stockholders have gotten tired of the refineries losing money and have served notice on the management that there must be profits or there will be new management. The management has accordingly, the past year, due to a more enlightened viewpoint on the fundamentals of sound business, done the sensible thing that should have been done years ago, kept the gasoline output down to what the markets will consume. Only one thing can result from that policy and that is a price for gasoline that is reasonable to the refiner.

The marketer cannot in fairness ask the refiner to return to the old way of losing money. It is now the marketer's turn to clean his own house, stop the payment of discounts and rebates, stick to a firm price and fight his sales price up to a point that is profitable, if the gross tank wagon and service station prices now in effect in his territory are not profitable—that is after the price cutting has been stopped.

The big companies in some territories are accused of keeping the price cutting in effect. That is something that marketing organizations will have to work out in each territory but they can approach the task most optimistically because the big companies need profits just as much, and sometimes more, than the smaller ones.

The marketers should also apply the thought that is now controlling the refiners and that is not to extend

their distribution facilities more than the needs of their respective markets. If a marketer's gasoline consumption in his immediate territory increased only 10 per cent last year and has increased only the same amount so far this year then he should not plan on increasing his business 15 or 20 per cent or some other higher figure next year unless he has most convincing advance information that that will be the increase in the gasoline gallonage in his territory, or else he has satisfied himself, beyond all question of doubt, that he can go out and take that additional business away from his competitors and make them like it.

Price fights come from one or more men trying to take business away from other men to which the latter think they are entitled, or which they need in their business or which they want badly enough to fight for it.

The oil companies, both big and little, have floated along too long now on the happy thought that "now we did a 20 per cent increase in business last year and this year we will steam every one up and make it 25 per cent," overlooking entirely the fact that their territories may have increased only 5 or 10 per cent in gallonage. What they were doing was thrashing some competitors, or thinking that they were.

In some territories, like in the Standard of Ohio, the big companies are going after business that was taken away from them in years past and frankly say they won't stop until they get it and they offer the very good reason that if they don't get it the companies won't make any money, the stockholders will be dissatisfied and the present management will undoubtedly get kicked out. As the present management, generally, likes to eat, it is going to try and get the profits.

It would be fine if there could be a millennium in this world but there won't be. Neither in oil nor any other business. There always will come a time when men will have to fight it out so that the best one wins.

However, that fighting can be largely avoided if men keep their business expansion somewhat in balance with increase in markets, increase in competitors and if they properly gauge the ability, or lack of ability, of their competitors.

The marketing end of the oil industry is rapidly cleaning up price cutting, under the urge of necessity. The Standard of Indiana territory is reported to be in particularly good shape. The same cleansing should be applied to all other territories as soon as possible.—W. C. P.

Letters to the Editor

Editor, NATIONAL PETROLEUM NEWS.

In the mad scramble for gallonage by the big and little companies I often wonder if they are really making any legitimate profit. Their books may show profit, but I doubt it. I dare say millions upon millions are carried as assets or rather open accounts that is not worth the price of a 2 cent stamp to mail the statement.

I base my facts on the following incidents: First, some wise guy who has the price to cover the rent of a vacant lot that looks good as a filling station site takes on a long lease and pays one or two months rent. Next the oil companies get hot on his trail to tie him for an outlet for their products. Next the oil company spends $1000 to $5000 equipping the station with pumps and signs, etc., and filling the storage tanks. Now everything is running swimmingly a lot of gallons sold but no money coming in for their efforts. The bird who owns the lease and operates the filling station has developed a big gallonage because he has shaded the price to get quick cash in hand and along comes other allied auto lines extending credit or consignments, therefore this bird has developed the fact that the world is full of suckers. When the credit ceases he sells his lease and beats it to new territory and hooks another bunch of suckers. The same thing is repeated by his successor.

This is quick money for crooks and they have not overlooked the game.

When will the executives get through kicking his division managers in the pants hollowering for gallonage and outlets for more gallonage regardless of the question when or where they will cash in on the gallonage. There will be a great squall among the stockowners demanding a show down. If some of these college trained executives will find time to suspend a few golf games and get out into the field and investigate facts and see just what is being done they will quickly change their policy and figure on incoming dollars instead of out going gallons.

In the city of New Orleans alone the major oil companies have lost more than $250,000 and this does not include the expense of installing loaned equipment. And I will bet all of this $250,000 is still carried as current assets on their ledgers. When they collect I will outfeat Lindbergh by walking across the Atlantic. I often wonder what it has cost the big companies in other large cities.

You are at liberty to publish this statement in order that the executives may dig into the facts instead of trying to analyze final statements.

If the executives of major oil companies would insist that cash in hand before the truck is unloaded and compel all filling station owners to furnish their own equipment I believe they would have more profit to show their stockholders and less dead assets on their inventory and help stabilize the prices. When a bird pays cash for his products he will likely hesitate to cut his price and work on a short profit. If he hasn't the money to operate on he has no place in the oil business.

A. Mathis.

Editor, NATIONAL PETROLEUM NEWS,
Sir:

I want to say Amen to your article in the NATIONAL PETROLEUM NEWS of Oct. 24, regarding Alemite's wonderful grease. It is indeed amusing to think that any concern would try to impose upon the ignorance of the public as the Alemite people did with their advertisement in the Saturday Evening Post of Sept. 15 and 29, without having their hand called by honest thinking men of the industry.

There is not a single oil company or grease manufacturer of any consequence in this country that does not market just as good a grease and lubricant as Alemite. The product of others than Alemite may be "ordinary" as termed by Alemite's advertisement but it will do the work and last if used according to recommendations of the manufacturers. When I read dope such as Alemite ran in the Saturday Evening Post, it makes me think that their writer must have forgotton what Lincoln said.

In the past the oil companies have stood back and let some of the specialty grease marketers reap a rich harvest by fooling the public with their propaganda and products but it is now up to them to get into the game.

Yours very truly,
(Signed) J. A. Davis,
Salesman—Pierce Petroleum Corp.

3 Santa Fe Springs Wells Worked Over Because of Water with the Oil

By W. E. Green
N. P. N. STAFF WRITER

LOS ANGELES, Dec. 15

REGARDLESS of the appearance of water in a number of wells at Santa Fe Springs, mostly from the bottom of the new deep Buckbee zone, many operators refuse to be pessimistic in regard to production from the new structure.

For instance, Wilshire Oil Co., discoverer of the new deep zone, has let contract for erection of 13 steel tanks of 170,000 barrels capacity. This company has foundations in for three 82,000-barrel steel tanks near its Santa Fe Springs lease. It has purchased in fee 145 acres near Santa Fe Springs on the Santa Fe railway where the 13 large tanks will be built.

General Petroleum Corp. is building a lot of steel tankage at its refinery site at Torrance and The Texas Company is also to build additional steel storage.

The building of additional steel storage, largely among those prominent in operations at Santa Fe Springs, indicate that considerable oil is expected, and these companies want to save the oil for future use. Wilshire had rather build steel storage than sell crude on the present market.

On Dec. 13, three near completions at Santa Fe Springs showed water and each well will have to be worked over. Graham & Loftus Santa Fe No. 1 came in for about 3000 barrels of fluid, 56 per cent of which was water and emulsion. This well was drilled to 5375 feet with casing cemented at 4966 feet. It will be worked over.

Union Oil Co.'s Alexander No. 11 had drilled to 5446 feet when a production test showed so much water it will have to be recemented. Shell Co.'s G.H.N. No. 16 was plugged back to 5220 feet from 5352 feet, and produced 3000 barrels of fluid in 16 hours. The water content was too great, however, and it will have to be recemented and perhaps plugged back again.

On the other hand, five wells were completed early in the week for an average production of 2580 barrels. Two completions making less than 1000 barrels brought down the average. The well average for all deep zone wells early in week was about 3000 barrels to the well.

Geo. F. Getty's No. 17, the well that burned so long, is now flowing at the rate of 6200 barrels from the intermediate or Nordstrum zone. Universal Consolidated's O'Connell No. 3 is the best well in the field and is flowing 6400 barrels of 34.7 gravity oil from the Buckbee zone.

The Potero field just outside the city limits of Los Angeles was placed on the oil map with its second producer late last week when Associated Oil Co.'s Cypress No. 3 came in for 840 barrels of 46.3 gravity oil at 3880 feet.

It is flowing through 22/32-inch bean with 675 pounds on the casing and 525 pounds on the tubing. It is making about 7,000,000 cubic feet of gas and 9-inch casing was cemented at 3640 feet. This production is coming from a zone slightly higher than in the same company's Cypress No. 2, which has been on production for several months and is now producing slightly more than 200 barrels.

Associated Oil Co. is now drilling Pacific Southwest No. 1 at 5920 feet and casing will be set next preparatory for a test. This well has taken in more formation than the other two wells and there is a chance for a good well.

Smith Petroleum Co. placed on production Dec. 13 its Smith Berry No. 1 for about 450 barrels of 33 gravity oil at 5906 feet with casing cemented at 5730 feet. This well is located near Hawthorne and Lawndale and is near a well completed some months ago and still flowing 115 barrels a day. The two wells are located near the townlot area of both Hawthorne and Lawndale and there has been some trading in city lots, although it is not expected that much drilling can be expected at least for the immediate future.

Barnsdall Oil Co. completed another well in the deep Zins sand at Rosecrans for 1450 barrels of 36.5 gravity oil with a 5 per cent cut. The hole was drilled to 5905 feet and casing cemented at 5525 feet. This is the second light gravity well completed by Barnsdall the past month in this field. General Petroleum Corp. this week completed a pipe line into the Kettleman Hills field and it will be tested the coming week. Previously, Standard of California had been taking the production from the Milham Exploration Co. well, hauling it away in tank cars. Milham is now storing the production pending opening the pipe line.

This well continues to produce around 3600 barrels of 59.5 gravity oil in addition to 45,000,000 cubic feet of gas. General Petroleum is making locations for four wells at Kettleman Hills and Standard is to drill at least three wells.

Doheny & Doheny is to drill at well in Sec. 14-22-17 and Geo. F. Getty is hauling material to a new location. E. J. Miley is to drill in Sec. 24-22-18 and Milham is to drill its second hole in Sec. 2-22-17. Thomas Petroleum Co. has secured a lease and is preparing to make a location. Associated Oil Co. will drill on Sec. 12-23-18. Bolsa Chica Oil Corp. has a lease in Sec. 30-23-19 and plans to drill in an old hole left standing at 3502 feet.

E. L. Doheny has taken over the Magenheimer lease offsetting the Hartman leases held by Associated and Bolsa Chica and will drill a well in Ventura Avenue. One well was drilled on this lease but ran into mechanical trouble. It is thought it was too shallow for production. There were two small completions in Ventura Avenue last week.

Union Oil Forms Branch To Drill in Mexico

LOS ANGELES, Dec. 15.—The forming of the Mexican Union Oil Co. as a subsidiary of the Union Oil Co. of California, was announced in Los Angeles a few days ago by Chester W. Brown, director of exploration and production of the parent concern.

The new company will have its headquarters at Avenida Hildalgo No. 1, Tampico, and will carry on drilling operations on its 25,000-acre lease of the Miahuapam Concession in the state of Vera Cruz, and will take over the drilling of a wildcat being put down on the lease south of the Tuxpam River.

Officers of the new company are L. P. St. Clair, president; Chester W. Brown, vice president; Ralph M. Putman, vice-president and general manager and Frederick Steinkruger, secretary. John A. Hendricks will be manager in Mexico. Mr. St. Clair is at present one of the vice-presidents of the Union Oil Co. and Mr. Putman is assistant manager of field operations of the company. Mr. Steinkruger will be in charge of the Mexican office. Mr. Putman will maintain his headquarters in Los Angeles.

Oklahoma City Wildcat Maintains Flow After Being Deepened

By John Power
N. P. N. STAFF WRITER

TULSA, Dec. 15

THE Indian Territory Illuminating Oil Co.-Foster Petroleum Corp. wildcat near Oklahoma City held the center of the stage this week.

Efforts to kill the flow with mud being unsuccessful, the well was allowed to flow unhindered until it had cleaned itself of the mud. It was then deepened three feet, to a new total depth of 6405. Response was almost instantaneous. Production for the first 15 minutes after deepening was 95 barrels, and for the first hour, 360 barrels. Oklahoma City is convinced, beyond a shadow of a doubt, there *is* a Santa Claus.

This rate of production was fairly well maintained throughout the night. Production for the 24 hours ending at 7 a.m. Dec. 15, amounted to 6564 barrels, with the well averaging 318 barrels per hour from the time it was deepened, (shortly after noon, Dec. 14) until the end of the gage period. No further information has been obtained as to the nature of the producing formation, which is thought by some to be the Simpson, by others to be the Hunton lime.

Due to limited facilities for handling the oil, the Marland Production Co. No. 1 Goodrich, SW NE SW of 16-25S-1E the Kansas wildcat north of the Wright pool in Sedgwick county, was an inconsistent performer during the week. It has been responding but sluggishly to agitation, about 2200 barrels per day being its top for the week.

At no time, however, has it been really exploited to the full, as tankage limitations have always forced the pinching in of the well after a few hours. The well is pinched in to 50 barrels per hour as this is written, and it will be kept in this condition until sufficient pipe line and tankage is available to give the well a thorough working over. The caving open hole is causing some trouble.

The Misener sand pool in Twp. 8N-5E is doing itself proud. The field is maintaining a per well average in excess of 1000 barrels per day, a mark which is not so bad for any man's oil field. The Pure Oil Co. has two new wells in, Nos. 2 and 3 Lindley. No. 2 is in the SW SW SE of 18-8-5, between, and offsetting both the discovery well, and the Prairie Oil & Gas Co. No. 1 Campbell. The latter, a light well in the SE SW of Sec. 18, two locations west of the discovery, is doing around 100 barrels daily. The No. 2 well of the Pure's is doing about 1600 barrels daily from both the Misener, topped at 4103 feet, and from the Hunton, encountered immediately beneath the Misener, at 4124, and drilled to 4140 feet.

The No. 3 well on the Pure's Lindley lease, is reported to be quite a well. Incomplete reports say the production is in excess of what the oil and gas separator can handle. This may be due in part to mechanical difficulty with the separator.

Although not extending the proven area, the new well, in the NW SE of Sec. 18, does help to establish the productive possibilities of the territory between the Amerada Petroleum Corp. No. 1 Hallum, in the NE SE SE of 1-8-4, and the Pure Oil Co. discovery well in the SE SW SE of 18-8-5. This newest well of the Pure's is a southeast diagonal offset to the Independent Oil & Gas Co. No. 1 Harding, which came in last week with an initial production of 1345 barrels. Top of the Misener in the Pure No. 3 is given as 4074 feet, with the present depth of the well 4085.

The drilling well of the White Eagle Oil & Refining-T. B. Slick

Deepened three feet, to a new total depth of 6405, *the Indian Territory Illuminating Oil Co.-Foster Petroleum Corp. well near Oklahoma City, in* 24-11*N*-3*W*, *promptly responded with a production increase. Making* 95 *barrels the first* 15 *minutes, it averaged* 318 *barrels an hour for nearly* 18 *hours*

interests, southeast of the present production, is fast nearing completion. The rig is being standardized at 4015 feet, with the top of the Mayes lime given as 4000 feet. This well is in many respects the most important well drilling in the pool at present. A mile southeast of production, it is in almost a direct line with northwest southeast trend which production from this usually erratic sand has taken.

Should this well produce in important figures from the Misener, it would partially prove up a strip more than three miles long, from itself in the NW SE of 20-8-5 to the Amerada No. 1 Hallum, in the NE SE SE of 1-8-4. Productive, this southern well would form the south point of a triangle whose sides are respectively a mile and a half, two miles, and three miles in length. The third point of the triangle is the Amerada Gosland well, in the NE SW of 8-8-5, about two miles north of the White Eagle well.

Interest in the region just north of the Wilcox area in the St. Louis pool was revived during the week by the showing in the T. B. Slick, Inc. No. 1 W. Davis, in the SW NW NE of 18-7-5. After getting the top of the green shale break, above the Simpson at 4055 feet, this test encountered the top of the pay at 4097 feet. It is swabbing at the rate of better than 45 barrels an hour from a total depth of 4107 feet, the pay being reported as Wilcox. If this production is coming from the Wilcox, the well is extremely high structurally. It is to be deepened early in the week.

The rest of the St. Louis pool, however, has been the scene of several failures. In the NW SW NW of 21-7-5, east of the field proper, and in the vicinity of the Mid-Continent Petroleum Corp. No. 1 Guinn, the Shell Petroleum Corp. has a dry hole in its No. 2 Smith, about a quarter mile northeast of the Mid-Continent well. Wilcox sand was found, with a hole full of water, at a depth of 4548 feet. Mid-Kansas Oil & Gas Co. also has a failure in the SW NW NW of 30-7-5, getting a hole full of water in the Wilcox at 4460 feet. The well will be plugged back to the Simpson, in which a small show of oil was had.

On the western edge of the pool, in Twp. 7-4, an improved well was added during the week. The Shaffer Oil & Refining Co. No. 4 Cherry, SE 23-7-4, was deepened one foot in the Wilcox to a new total depth of 4368 feet. It swabbed 2060 barrels in 24 hours, cutting 1 per cent.

With the Independent Oil & Gas Co. Youts lease in 19-7-5 back on the duty roster, production from the Wilcox climbed back close to its recent high. A comparative table of production by leases is given.

Comparative Table of Production in St. Louis Pool

(By Leases)

Company	Lease	Location	Wells	Prod. Dec. 14	Prod. Dec. 7
Barnsdall	Stahl	30-7-5	2	2,237	2,054
Gypsy-Sinclair	Stahl	30-7-5	5	11,692	11,472
Phillips	Stahl	30-7-5	2	425	710
Sinclair	Blandin	24-7-4	2	3,005	3,130
Sinclair	Nadash	20-7-5	1	220	270
Magnolia	Hembree	19-7-5	4	5,064	5,715
Magnolia	H. E. Youts	20-7-5	5	6,248	7,453
Magnolia	C. A. Youts	20-7-5	1	650	680
Magnolia	T. Fyke "A"	20-7-5	1	.....	.....
Magnolia	T. Fyke "B"	20-7-5	1	3,797	3,015
Magnolia	Cherry "A"	26-7-4	1	3,661	4,407
Slick	Hembree	19-7-5	4	13,700	14,805
Slick	Youts	19-7-5	2	1,653	1,942
Mid-Continent	Guinn	20-7-5	1	625	950
Pure	Thomas	26-7-4	3	7,375	3,290
Independent	Youts	19-7-5	8	21,310	4,480
Prairie	Wolfe	20-7-5	4	3,710	3,705
Shell	Smith	21-7-5	1	554	340
Shaffer	Cherry	23-7-4	2	2,397	1,585
Texas Co.	Cherry	25-7-4	3	4,920	4,785
			53	93,137	84,518

Operators in the Mission area met during the week, discussed and adopted an amendment to the development plans for the field. The second group of wells will not be started until Feb. 20, instead of the first of January, as originally planned. This will give the field a chance to demonstrate its productive possibilities without forcing the complete drilling up of the pool.

Another well, started before the present agreement was put into effect retarding the completion of drilling wells in the pool prior to Feb. 15, was completed during the week. Sinclair Oil & Gas Co. No. 1 Harjo, SW SE of 11-8-5, had the top of the sand at 4308 feet. After drilling to 4313, the well made 1044 barrels during the subsequent 24-hour period.

THE most important well in this field during the week was the Empire Oil & Refining Co. No. 1 Cluck, a half mile north of the Sinclair well, which is the nearest production. Good for 40 barrels an hour, the Empire well had the Wilcox at 4173 to 4178 feet. It is in the SW NE of 11-8-5. Another well this time a dry hole, was completed in the NW NE of 148-14-8-5. The Gypsy Oil Co. No. 1 Mimey had the Wilcox with a hole full of water, at 4480 feet.

The Seminole area as a whole did not fare so well during the week. Several dry holes were completed along the edges of the various member pools. T. B. Slick, however, got a fair well in his No. 5 Campbell, SE NE NW 6-9-6, on the extreme northeast edge of the Earlsboro field. Top of the Hunton was reported as 4137 feet, the well flowing 1900 barrels of oil, with 12 per cent B.S. and water, from a total depth of 4145 feet. In the same section Skelly Oil Co.-Atlantic Oil Producing Co. No. 1 Little, made a small well in the Wilcox, swabbing 130 barrels in 11 hours from that formation encountered at 4400 to 4410 feet.

Both the Little River and Bowlegs districts saw dry holes added to their number. Due east of the north end of the Little River pool the Marland Production Co., No. 1 Lacke, is a dry hole in the Wilcox. The test, in the SE NE SW of 32-8N-7E, had the sand, with a hole full of water, at 4574-4590 feet. The Bowlegs failure was the Magnolia Petroleum Co. No. 7 Rhodes, in the SE NW SE of 12-8-6. Top of the second Wilcox was at 4300 feet, this formation carrying water.

Notes on the Week

The T. B. Slick Inc. No. 1 Huist, SE NW NW of 17-7N-2E, a wildcat test in Pottawatomie county, is drilling in Sylvan shale, after having a small show of oil in the Hunton, which was passed up.

Another "Pot" county wildcat is a failure in the Wilcox. The Phillips Petroleum Co. No. 1 Sparkman, SE SW of 15-8N-4E, is being plugged after having a hole full of water at 4654-4673 feet.

A showing of heavy black oil has been reported from the Shaffer Oil & Refining Co. test on the Harner farm, SW NE 20-7N-8E. The showing, estimated as good for about 60 barrels per day, was encountered in a sand at 2919-2950 feet. The 8-inch casing is being underreamed to test the formation thoroughly.

* * *

Iron Mountain Oil Co., controlled by the estate of the late Lemon G. Neely, St. Marys, Ohio, is making its initial venture into the Seminole territory in drilling. It is building rig for No. 1 Anderson, NEc NW SW of

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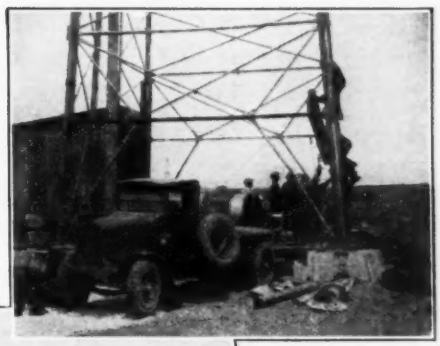

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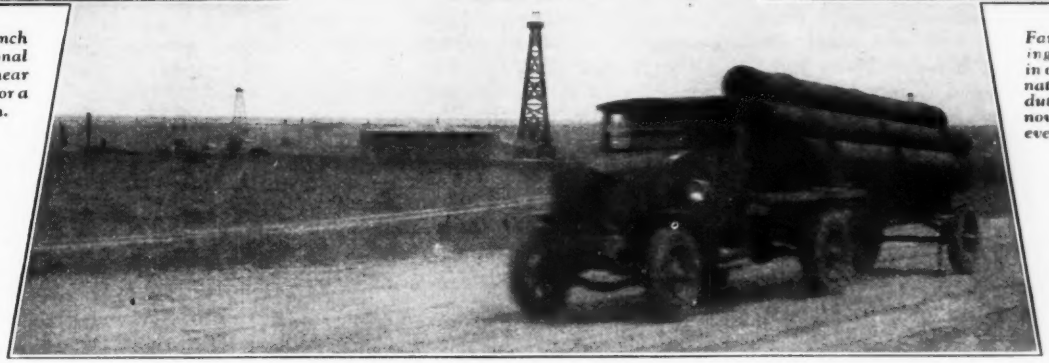

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13-9-5E, offsetting an Earlsboro sand well recently completed by the Magnolia Petroleum Co., which made 3500 barrels on air lift. Iron Mountain has made location for its No. 2, in the SEc NW SW of the same section, this to be a diagonal southwest offset to the Magnolia well.

* * *

Anderson-Prichard Oil Corp., Oklahoma City, has an option to purchase the plant of the Turley Refining Co., at Oklahoma City. The plant has been idle for some time. Anderson-Prichard do not plan to resume operations soon, if they buy it. The loading rack is now being used by the Empire Pipe Line Co. to handle production of the Indian Territory Illuminating Oil Co.'s discovery well south of Oklahoma City.

Agree To Delay Drilling In Mission Pool

TULSA, Dec. 15.—The second group of wells in the Mission pool is not to be started until Feb. 20. This was decided at an operators meeting held in Tulsa Dec. 12.

Under the present development plan, but two wells per 40-acre tract are being drilled, and none of these wells are to be completed before Feb. 15. By delaying the second series of wells until after the completion of the first group, a thorough knowledge of the productive possibilities of the field will be known before further drilling.

Efforts to restrict drilling in the vicinity of the new Empire Oil & Refining Co. No. 1 Cluck, in the SW NE of 11-8-5, were started at the same meeting. Due to the absence of some operators with acreage close in to the new producer, nothing definite in this direction has been accomplished as yet.

It is hoped to restrict drilling to three offsets around this well, which is half a mile north and two locations east of the Barnsdall Oil Co. No. 1 Wolfe, in 14-8-5, which has been doing about 1400 barrels since it was opened up recently. The Empire well topped the Simpson, with a show of oil at 4130 feet, and the Wilcox at 4170. Production from the extension which is drilling deeper, is about 40 barrels per hour.

TULSA, Dec. 15.—United States Circuit Court of Appeals, Fifth district, this month rendered a decision against the Transcontinental Oil Co. in its suit to compel the Mid-Kansas Oil & Gas Co. to deliver the Transcontinental half of the Yates pool, Pecos county, Texas, production in oil instead of money. The case was on appeal from the northern district of Texas federal district court, which had found for the Mid-Kansas also.

Bureau of Mines "Grads" Form Own Alumni Association

TWENTY-ONE "graduates" of the U. S. Bureau of Mines met at breakfast in Chicago, Dec. 6, and organized the Alumni Association of the Petroleum Division of the Bureau of Mines. Those present were in attendance at the annual meeting of the American Petroleum Institute and came from all sections of the country.

In addition to those who have left the bureau, two men who are now in the Petroleum Division attended the meeting, H. C. Fowler, who is at present acting chief petroleum engineer of the Bureau and E. L. Rawlins, associate natural gas engineer of the Bartlesville station. Three other men who were formerly engaged upon oil and gas work for the Bureau, V. R. Garfias, R. R. Matthews, and T. E. Swigart were in Chicago at the time but were unable to attend the meeting.

Included in the gathering were four of the six men who have held the position of chief petroleum engineer of the Bureau and Dr. Van H. Manning a former director of the bureau. Although Dr. Manning was head of the entire bureau and directed work covering all phases of the mineral industry, he has been connected with the petroleum industry since leaving the bureau and for that reason it was decided unanimously that he should become a member of its alumni association.

The purpose of the organization is to maintain closer contact between the men who were formerly members of the petroleum division than has been possible in the past. It is also believed that, through an organization of this kind, it will be possible for the "graduates" to keep in closer touch with the work upon which the bureau is now engaged.

Most of the men who have left the petroleum division are now engaged on similar work with oil companies and are in a position to render service to the bureau by suggesting problems that should be studied and by recommending men for work with the bureau who will maintain the high standards of the past. No formal organization is planned but meetings will be held from time to time at the large representative gatherings of the petroleum industry.

The alumni association is open to everyone who was formerly employed by the Bureau of Mines on oil and gas work. The attendance at the meeting represented only a small percentage of those who have left the petroleum division in order to accept positions in the industry. A complete list of the "graduates" is being prepared and all those eligible will be invited to join the new organization.

The following attended the first meeting of the alumni association.

A. W. Ambrose, Empire Companies, Bartlesville, Okla.; Max W. Ball, Consulting Engineer, Denver, Colo.; C. E. Beecher, Empire Companies, Bartlesville, Okla.; H. W. Bell, Pure Oil Co., Chicago, Ill.; E. O. Bennett, Marland Oil Co., Ponca City, Okla.; E. P. Campbell, Marland Oil Co., Breckenridge, Texas; R. E. Collom, Marland Oil Co., Los Angeles; Harry C. Fowler, U. S. Bureau of Mines, Washington; Harry H. Hill, Standard Oil Co., New Jersey, New York; R. R. Kelly, Pure Oil Co., Fort Worth, Texas; M. J. Kirwan, Indian Territory Illuminating Oil Co., Bartlesville, Okla.; H. J. Lowe, Pure Oil Co., Chicago; Van H. Manning, Petroleum Research Corp., New York; Chester Naramore, Sinclair Oil Corp., New York; H. R. Pierce, Dunn & Lewis, Pittsburgh; E. L. Rawlins, U. S. Bureau of Mines, Bartlesville, Okla.; Walter F. Rittman, Carnegie Institute of Technology, Pittsburgh; K. C. Sclater, Marland Oil Co., Ponca City, Okla.; W. W. Scott, Humble Oil & Refining Co., Houston; Earl W. Wagy, Standard Oil Co. of California, San Francisco; D. P. Wardwell, Wyoming Airways Corp., Casper, Wyo.; John H. Wiggins, Tulsa, Okla.; W. A. Williams, Crown Central Petroleum Co., Houston.

Final Data Drawn on Vapor Pressure Testing

TULSA, Dec. 17.—Conclusions of the petroleum industry with reference to the type of vapor pressure testing device which should be adopted by the Bureau of Explosives are to be in the hands of Colonel Dunn by Jan. 2. This announcement was made here by A. V. Bourque, secretary of the Natural Gasoline Association.

To arrive at these conclusions three regional sub-committees of the American Petroleum Institute committee on vapor pressure are compiling data. Paul W. Prather, one of the inventors of the Beistel-Prather method, will be in Bartlesville this week to conduct a series of tests of his apparatus in comparison with the Reid method, in conjunction with G. G. Oberfell of Phillips Petroleum Co., Mid-Continent sub-committee chairman. Other regional chairmen are P. S. Magruder, General Petroleum Corp., Los Angeles, and C. A. Neusbaum, Standard Oil Co. of New Jersey, New York.

Those in the industry who have compiled data indicating the superiority of one method over the other are being asked to submit the information to one of the chairmen.

Seminole Production by Companies and Leases, December 12 and December 5, 1928

LITTLE RIVER

Company	Farm	S.T.R.	Dec. 12th Wells	Dec. 12th Prod.	Dec. 5th Wells	Dec. 5th Prod.
Amerada	Nitey	2- 7-6	3	410	3	620
Amer.-Wilcox	Fore	35- 8-6	2	255	2	255
Total Amerada			5	665	5	875
Barnsdall	Cotcha	23- 7-6	1	855	2	940
Barnsdall	Hotulke	22- 7-6	3	243	2	204
Barnsdall	Walker	4- 7-6	1	565	1	500
Total Barnsdall			5	1,663	5	1,644
Blackwell	Baker	35- 8-6	4	1,040	4	935
Blackwell	Nitey	35- 8-6	6	1,160	6	1,299
Blackwell	Talley	14- 7-6	4	945	4	985
Total Blackwell			14	3,145	14	3,219
Bryan-Emery	Walker	4- 7-6	1	13	1	14
Carter	Cotcha M	23- 7-6	3	190	3	120
Carter	Cudjo L	23- 7-6	2	205	1	240
Carter	Fish	36- 8-6	4	415	4	415
Carter	Harjo C	11- 7-6	3	4,750	3	5,167
Carter	Harjo M	13- 7-6	2	720	2	750
Carter	Jackson	11- 7-6	4	1,255	4	1,327
Carter	Larney	24- 7-6	3	1,420	3	1,396
Carter	Lena	10- 7-6	1	620	1	682
Carter	Moore	11- 7-6	2	410	2	437
Carter	Tewee	14- 7-6	6	2,570	6	3,220
Carter	Thomas	11- 7-6	1	317	1	305
Carter	Wilson	12- 7-6	2	457	2	445
Total Carter			33	13,349	32	0
Champlin	Tewee	14- 7-6	2	1,567	2	1,697
Continental	Cosar	36- 8-6	7	1,715	7	1,565
Continental	Cosar M	25- 8-6	1	390	1	405
Cont. & Fisher	Milsey	11- 7-6	2	810	2	325
Total Continental			10	2,915	10	2,295
Empire	Charty	24- 7-6	1	150	1	218
Empire	Coker	13- 7-6	1	907	1	987
Empire	Sandlin	3- 7-6	1	7	1	0
Total Empire			3	1,064	3	1,207
Gypsy	Brown	33- 8-6	2	405	2	572
Gypsy	Brown M	33- 8-6	1	1,087	1	1,250
Gypsy	Campbell	33- 7-6	2	32	2	2
Gypsy	Conard	22- 7-6	2	665	2	675
Gypsy	Cosar	25- 8-6	1	0	1	0
Gypsy	Cosar W	36- 8-6	2	120	2	195
Gypsy	Cotsha	23- 7-6	6	1,795	6	1,807
Gypsy	Denmark	11- 7-6	4	1,710	4	2,287
Gypsy	Hulhoke	14- 7-6	10	2,825	10	3,297
Gypsy	Mungee	1- 7-6	1	2	1	15
Gypsy	Payne	5- 7-7	1	0	1	45
Gypsy	Pottie	35- 8-6	4	1,057	4	697
Gypsy	Renton	11- 7-6	3	400	3	320
Total Gypsy			39	0	39	11,662
Independent	Davis R	13- 7-6	3	1,610	2	1,595
Independent	Tewee	14- 7-6	6	2,757	6	2,747
Independent	Williams	15- 7-6	1	375	1	510
Indep. & Highway	Harris	23- 7-6	3	1,893	3	2,002
Indep. & White	Davis	2- 7-6	4	510	4	525
Total Independent			17	7,145	17	7,379
I. T. I. O.	Campbell	1- 7-6	1	128	1	139
I. T. I. O.	Dungan	35- 8-6	3	888	3	813
I. T. I. O.	House MA	1- 7-6	1	51	1	46
I. T. I. O.	House WE	1- 7-6	1	21	1	26
I. T. I. O.	House B	2- 7-6	4	452	4	489
I. T. I. O.	Hull	26- 8-6	3	463	3	484
I. T. I. O.	Jackson	1- 7-6	3	603	3	618
I. T. I. O.	McCulla	1- 7-6	3	279	3	302
I. T. I. O.	Nitey	2- 7-6	6	124	6	247
I. T. I. O.	Phoebe A	36- 8-6	2	129	2	162
I. T. I. O.	Phoebe B	36- 8-6	3	118	3	140
I. T. I. O.	Reed	1- 7-6	1	41	1	16
I. T. I. O.	Soketheche	1- 7-6	3	689	3	645
Total I. T. I. O.			34	3,968	34	4,127
Magnolia	Cruse	2- 7-6	4	516	4	483
Magnolia	Denby	11- 7-6	4	1,288	3	1,496
Magnolia	Dixon	31- 8-7	1	3	1	2
Magnolia	Harjo A	14- 7-6	2	120	2	165
Magnolia	Harjo B	14- 7-6	2	528	2	600
Magnolia	Pottie	35- 8-6	4	400	4	491
Magnolia	Reed E	31- 8-7	1	28	1	30
Magnolia	Reed I	22- 7-6	3	688	3	776
Total Magnolia			21	3,571	20	4,047
McCulloch-Sands	Harrison	4- 7-6	1	29	1	32
Mid-Continent	Brunner	11- 7-6	3	950	4	1,000
Mid-Continent	Fleck	23- 7-6	1	210	1	215
Mid-Continent	Smith	5- 7-7	2	3,690	2	3,730
Mid-Continent	Wadsworth	36- 8-6	7	320	7	200
Total Mid-Continent			14	5,170	14	5,145
W. B. Pine	Hoyecha	26- 8-6	6	2,323	6	2,315
Pine-Phillips	Pottie	35- 8-6	2	340	2	307
Total Pine			8	2,663	8	2,622
Prairie	Chilcoat	25- 8-6	3	505	3	800
Prairie	Dungan	35- 8-6	1	25	1	30
Prairie	Gibson	14- 7-6	5	1,820	5	1,865
Prairie	Harris	14- 7-6	4	1,225	4	1,400
Prairie	House	2- 7-6	4	265	4	275
Prairie	Lustey	5- 7-7	1	0	1	0
Prairie	Moppin	24- 7-6	1	310	1	365
Prairie	Talley	14- 7-6	4	1,305	4	1,390
Prairie & Amerada	Sunny	14- 7-6	8	4,320	8	4,200
Total Prairie			31	9,775	31	10,325
Pure	Brinson	24- 7-6	1	1,002	1	1,398
Pure	Cotcha	14- 7-6	9	3,229	9	3,268
Pure	Harjo	11- 7-6	4	740	4	746
Pure	Hollins	11- 7-6	1	453	1	505
Total Pure			15	5,423	15	5,412
Reiter-Foster	Bunyard	14- 7-6	4	1,960	4	2,330
Roxana	Caesar	11- 7-6	1	0	1	5
Roxana	Hotulke	23- 7-6	2	1,201	4	995
Roxanna	Johnson	13- 7-6	2	2,741	4	2,976
Total Roxana			9	3,942	9	3,971
Shaffer	Narcome	36- 8-6	2	177	2	305
Sinclair	Cosar	30- 8-6	5	595	3	675
Sinclair	Haney	12- 7-6	1	105	1	97
Sinclair	Tewee	14- 7-6	1	1,410	2	1,595
Sinclair & Kingwood	Pompey	24- 7-6	1	130	1	80
Total Sinclair			7	2,240	7	2,447
Skelly	Carl	14- 7-6	2	1,293	2	1,366
Slick	Reed	13- 7-6	1	635	1	1,160
Slick	Williams	15- 7-6	2	380	2	425
Slick	Wood	26- 7-6	1	350	1	360
Slick et al	Coker	1- 7-6	1	822	1	895
Total Slick			5	2,187	5	2,830
Snowden et al	Tiger	13- 7-6	3	1,180	3	1,295
Superior	Potulka	31- 8-6	1	5	1	5
Superior	Soketheche	1- 7-6	1	5	1	5
Total Superior			2	10	2	10
Texas	Brooks	25- 8-6	1	18	1	195
Texas	Coker	1- 7-6	3	400	3	330
Texas	Janey	11- 7-6	3	635	3	645
Texas & Indep.	Hotulke	23- 7-6	4	1,570	4	1,675
Total Texas			11	2,623	11	2,845
Tidal	House	1- 7-6	2	430	3	450
Tidal	Johnson	1- 7-6	1	25	1	25
Total Tidal			3	455	4	475
Twin State	Lowe	25- 8-6	1	135	1	130
Wigdon-Long	Jefferson	31- 7-6	1	35	1	35
TOTAL LITTLE RIVER			309	88,478	305	94,234

MAUD

Amerada	Gossland	8- 8-5	1	0	1	647
Amerada	Hallum	1- 8-4	1	0	1	3,205
Barnsdall	Fife	14- 8-5	1	1,025	1	1,405
Empire	Cluck	11- 8-5	1	1,334	0	0
Gypsy	Bourassa	7- 8-5	1	0	1	0
Indep.	Harding	18- 8-5	1	1,395	1	1,345
I. T. I. O.	Simpson	10- 8-5	1	54	1	0
I. T. I. O.	State	16- 8-5	1	0	1	0
Prairie	Campbell	18- 8-5	1	110	1	110
Pure	Lindley	18- 8-5	1	3,608	1	2,250
Sinclair	Bellars	19- 8-5	1	1,840	1	355
Sinclair	Harjo	11- 8-5	1	1,516	0	0
TOTAL MAUD			13	14,522	10	9,317

MISSION

Carter	Fuswa	18- 8-6	1	0	1	0
Carter	Micco	8- 8-6	1	0	1	0
Gypsy	Baby	6- 8-6	1	0	1	15
Gypsy	Barkus	6- 8-6	1	0	1	0
Gypsy	Dosar	7- 8-5	1	572	1	847
Gypsy	Mission	5- 8-5	1	0	1	7
Gypsy	Mosar	1- 8-5	1	0	1	0
Marland	Maines	7- 8-6	1	70	1	85
Mid-Kansas	Moore	7- 8-6	1	70	1	95
Roxana	Maines	7- 8-6	1	0	1	0
Rox-Marland	Hernsdon	7- 8-6	1	0	1	0
Slick	Tiger	13- 8-5	1	0	1	0
Twin State	Hayes	8- 8-6	1	50	1	50
TOTAL MISSION			12	762	12	1,099

SUMMARY

TOTAL LITTLE RIVER	**309**	**88,478**	**305**	**94,134**
TOTAL MAUD	**13**	**14,522**	**10**	**9,317**
TOTAL BOWLEGS	**312**	**46,427**	**312**	**46,755**
TOTAL EARLSBORO	**290**	**76,078**	**288**	**75,018**
TOTAL SEMINOLE	**282**	**40,746**	**284**	**41,576**
TOTAL SEARIGHT	**67**	**10,040**	**67**	**10,161**
GRAND TOTAL	**1,285**	**277,053**	**1,278**	**278,160**
Avg. per well		**216**		**217**

Completions in Oklahoma and Kansas, Week Ended December 15, 1928

OKLAHOMA

Creek County

Company	Well No.	Location	Depth	Init. Prod.
Shaffer	2	SEc NW 26-18-7 E	2883-2900	10M
Tibbens	1	SWc NW 29-15-9 E	T.D. 4105	Dry
Texas	1	SEc SW 3-17-10 E	T.D. 3002	Dry
Kennedy-Horner	2	SEc 15-18-11 E	T.D. 2181	Dry

Garvin County

Garland et al	1	SW NW SW 10-4-3 E	T.D. 3493	Dry

Hughes County

Texas-Pacific	1	C SW SE 11-5-8 E	T.D. 3507	Dry

Kay County

Nehr et al	2	C NE SW 31-28-1 E	T.D. 1000	Dry
Ingram-Wilson	2	NWc SE NE SW 14-27-1 E	670-675	3M
Slick-Comar	1	SWc 35-25-1 W	4400-4405	75

Logan County

Crosbie	1	NWc 20-19-4 W	4720-2740	12M
Sinclair	2	NE SE SE 18-19-4 W	6000-6125	3272

Muskogee County

Williams	1	CEL SW SW 9-15-17 E	T.D. 1495	Dry
Metzger et al	1	NWc SW 13-14-18 E	1100-1118	1M
Keller-Ingram	2	SEc NE SW 3-15-18 E	T.D. 1555	Dry
Doyle et al	3	NWc SW 9-15-15 E	1670-1679	7

Okfuskee County

Umburn	6	NEc SE 11-10-11 E	1990-2007	40
P & R Corp-Carey	1	NW NE SE 29-12-10 E	2930-2940	1320

Okmulgee County

Hazlett	6	SEc NW SE 2-13-14 E	1963-1973	OWD 1M
Swindler	11	CNL NE SE 20-15-14 E	1674-1678	35
Jolly et al	1	SEc SW 33-15-14 E	1705-1743	OWD 25
Wentz et al	1	NEc SW SE 14-14-12 E	T.D. 2568	Dry
Thompson-Black	1	SEc NW SE 28-15-11 E	T.D. 2915	Dry
DeWitt et al	1	SWc SE SE 25-16-13 E	T.D. 2369	Dry

Osage County

Peters-Edgewood	2	SE NE SE 8-21-9 E	T.D. 468	Dry
Peters-Edgewood	3	CEL SE SE 8-21-9 E	T.D. 384	Dry
Moore Est	5	SWc NW NW NW 16-21-9 E	T.D. 420	Dry
Stanley et al	1	SE SW SW 10-25-8 E	T.D. 2440	Dry
Devonian	1	NE SE SE 25-21-9 E	2071-2097	25
Siluiran	52	CSL NE SW NE 18-23-12 E	1652-1717	20
I. T. I. O.	402	SWc SE SW SW 28-23-9 E	335-355	7
Phillips	16	NE SW SE 21-25-12 E	1608-1725	15
Carter	1	NEc SE 33-26-6 E	2880-2900	50
Lewis Prod	1	SWc NW 14-26-6 E	2962-2982	65
Kewanee	13	NE NW NE 28-27-6 E	2922-2990	15

Pontotoc County

Company	Well No.	Location	Depth	Init. Prod.
Ramsey	4	NWc SW 20-5-8 E	2732-2739	OWD 140
Westhiemer-Daube	7	SE NE SW 19-5-8 E	2650-2658	400
Ramsey	2	SEc NW 19-5-8 E	2570-2621	955

Pottawatomie County

Magnolia	1	SE SW NE 20-7-5 E	4397-4389	42
Texas	6	CSL SE NW SE 5-9-5 E	4377-4378	20
Sinclair	1	CNL NE 26-7-4 E	4250-4275	723
Independent-Darby	4	SE SW SW 14-7-4 E	3709-3951	160
Darby	2	NEc SW 23-7-4 E	4140-4262	25
Shaffer	3	SW SE SE 23-7-4 E	4260-4389	717
Sinclair	13	24-7-4 E	4193-4230	3495
Sinclair	2	NE SE SE 25-7-4 E	4195-4437	135
Amerada	1	NE SE SE 1-8-4 E	4143-4154	3975

Seminole County

Burke-Greis	2	SW NE SE 18-5-8 E	2522-2604	712
Mid-Continent	2	NE NW NE 5-7-7 E	4486-4491	470
Slick	1	NEc SW 26-7-6 E	4280-4317	1100
Gypsy	5	SW NW SW 23-7-6 E	4548-4553	25
Carter	3	SEc SW 11-7-6 E	4326-4400	5
Slick-Pine	1	NW SW SW 1-7-6 E	4112-4132	1005
Magnolia	1	NW NE SW 13-9-5 E	4198-4225	3742
Texas	2	SW NW SE 6-9-6 E	4370-4387	4385
Carter	5	NW NE SW 6-9-6 E	4550-4559	80
Mid-Continent	2	NE SE SE 32-10-6 E	4333-4344	1075
Twin State	1	NE NW NW 4-7-6 E	T.D. 4565	Dry

Stephens County

Pace et al	10	SWc NW NE 18-2-7 W	1484-1489	15
Pace et al	9	SWc SE NE NW 18-2-7 W	1477-1505	160
Lone Eagle	7	NEc SW NE SE 34-1-8 W	1652-1660	15
Magnolia	4	SW SE SW 13-1-4 W	2977-3002	90
Humble	5	NE SE NE 25-1-4 W	2698-3146	105

Tulsa County

McMahon et al	1	NE NW NE 14-19-10 E	T.D. 2668	Dry

KANSAS

Butler County

Empire	3	SE SW NE 22-27-5 E	2717-2746	150
Empire	3	NE SE SW 27-27-5 E	2734-2750	175
Davis-Hazlett	9	SE NW SW 3-27-6 E	3155-3169	100

McPherson County

Mid-Co	1	NWc SE 32-18-2 W	2965-2988	100

Russell County

Eskridge et al	1	NE NW NE 32-13-15 W	T.D. 3366	Dry

Completions in North Louisiana and Arkansas, Week Ended December 13, 1928

Louisiana—DeSoto Parish

Company	Well	Location	Depth	Yield
La. Public Utilities Co.	Rambin No. 1	13-12-12	797	2M gas

Morehouse Parish

Stovall Drilling Co.	Etheridge No. 1	22-20-4E	2157	12M gas
United Carbon Co.	Wright No. 1	10-20-4E	2156	45M gas

East Carroll Parish

Palmer Corp	Carroll Land Co. No. 1	21-19-11E	3141	dry, abd.

Richland Parish

Richland Oper. Co.	Traylor No. 1	24-16-6E	2474	4M gas

Union Parish

Carter & Wingfield	Security Trust No. 3	23-23-1W	3502	dry, abd.

Caddo Parish—Pine Island

Magnolia Pet. Co.	Robertshaw No. 23	23-21-15	2785	30 bbls.

Sabine Parish

Company	Well	Location	Depth	Yield
Doern et al	Pickering Lbr. Co. No. 1	17-4-11	4330	dry, abd

Arkansas—Nevada County

Humble O & R Co	J. Haynie No. 1	6-14-20	1147	25 bbls.

Ouachita County

Little Fay Oil Co.	H. Primm No. 2	23-15-16	2050	30 bbls.

Ashley County

Atlantic O P Co.	Moffatt No. 1	28-16-8	3951	junked, abd.

Chicot County

S. D. Hunter	Sawyer No. 1	19-18-2	3321	junked, abd.

Union County—Rainbow City

Marine Oil Co.	J. F. Sample Co. No. 4	7-17-13	3085	200 bbls.

Drilling Operations in Oklahoma, Kansas and Texas, Week Ended December 15, 1928

	Dec. 15 Loc.	Rigs	Drg.	S.D.	Week Ended Total	Dec. 8 Loc.	Rigs	Drg.	S.D.	Total
OKLAHOMA										
Osage	2	7	36	2	47	1	8	40	2	51
Bristow-Cushing	8	4	43	6	61	6	8	36	7	57
North Oklahoma	6	8	52	24	90	7	9	49	27	92
South Oklahoma	9	8	82	30	129	12	6	83	30	131
Muskogee	..	10	39	29	78	..	6	41	29	76
Okmulgee-Bristow	8	33	71	21	133	8	31	57	26	122
Seminole Dist.	24	77	355	25	481	21	92	346	22	481
Total Oklahoma	57	147	678	137	1,019	55	160	652	143	1,010
KANSAS	..	*48	247	48	343	..	*45	246	52	343

	Dec. 15 Loc.	Rigs	Drg.	S.D.	Week Ended Total	Dec. 8 Loc.	Rigs	Drg.	S.D.	Total
TEXAS										
Central	54	34	195	134	417	59	29	196	136	420
Panhandle	19	20	99	47	185	15	19	96	50	180
N. Central	38	25	132	46	241	31	24	135	33	223
West	40	30	215	153	438	12	9	41	45	107
Total Texas	151	109	641	380	128	117	81	468	264	930
New Mexico	10	2	32	6	50	8	4	30	19	61
GRAND TOTAL	218	306	1,598	571	2,693	180	290	1,396	478	2,344

*Locations and Rigs combined.

New Field Operations in Oklahoma, Kansas, Panhandle, North, North Central and West Texas, Week Ended December 15, 1928

OKLAHOMA

Beckahm County

Company	Well No. Farm	Location	
Magnolia	2-Davis	SW NW SE 21-9-23 W	

Carter County

Humble	6-Dixon	NW SW NW 30-1-3 W	

Cotton County

Jenkins et al	2-Record	NW NE SW 6-2-10 W	

Creek County

Gray	2-Ramsey	SW NE SE 10-14-10 E	
McCulloch	2-Venci	SW NW NE 31-14-9 E	
Skelly	1-Watson	NEc SW SW 15-14-8 E	OWD
Flynn-Morgan	1-Clark	NW NE SW 17-14-8 E	
Madden-Madden et al.	1-Childers	NWc NE 24-15-9 E	
Jackson-Wise	1-Frank	SWc 1-17-11 E	
Collins	1-Townslot	CWL SW NE NE 3-17-11 E	
Taylor et al	1-Goat	SWc NW SE 31-18-11 E	
Shaffer	1-McIntosh	SEc NE NW 26-18-7 E	
Bartlett	1-Sewell	NEc 18-19-9 E	
Smith et al	1-Asbury	NW NE SE 8-19-7 E	

Hughes County

Magnolia	4-Reed	SE SW NW 17-5-8 E	

Kiowa County

Adams	1-Hamilton	NWc SW 2-6-17 W	
Aregood et al	1-Finney	NEc SW SW 8-6-16 W	

Logan County

Sinclair et al	1-Gragg	SWc 15-18-4 W	
Shell	3-Freelove	SW NW SW 17-19-4 W	
Sinclair	4-Webber	SE NE SE 18-19-4 W	

Muskogee County

Metzer et al	1-Taylor	CEL NE SE 14-14-18 E	
Metzger et al	5-Francis	CNL SW SW 1-14-18 E	
Mack Drlg	1-Friday	SEc NE 7-15-15 E	

Okfuskee County

Minnehoma	1-Johnson	SEc NW 34-11-11 E	
Champlin	13-Carter	NEc SE SW 15-11-11 E	
Champlin	10-Tucker	SEc NE SW 15-11-11 E	
Pure	1-Anderson	NEc SE 23-11-10 E	
Producers & Ref. Corp. et al.	2-Monarye	SW NE SE 29-12-10 E	
McMahon	2-Fixico	SW NW SE 29-12-10 E	
Champlin	1-Campbell	SE NE SW 29-12-10 E	

Okmulgee County

Leard et al	1-Calloway	NWc NE NW NE 19-11-13 E	
Rebold et al	2-Scott	SWc NW SW NE 27-13-11 E	
Shaffer et al	1-Bell	SWc NE 30-14-12 E	
Swindler	1-Lewis	NWc NE SE 20-15-14 E	
Pine et al	4-Bighead	CNL SE SE 9-15-12 E	

Osage County

Okla. Natural	1661	NEc SW SW 27-21-11 E	
McCune et al	1	NWc SW NE 15-24-8 E	
Atlantic	1	NE SW NE 19-24-8 E	OWD
Peters Petroleum	7	CEL W½ NW 26-25-9 E	
Peters Petroleum	8	C NW 26-25-9 E	
Lewis Prod. et al	2	NWc SW 14-26-6 E	
Carter	1	NWc SW 34-26-6 E	

Pawnee County

Kennedy-Horner	2-Kender	C NE NE 13-20-9 E	

Payne County

Slick et al	1-Anderson	NEc NW 3-17-6 E	

Pittsburg County

Aylor et al	1-Martin	SEc NW 6-6-14 E	

Pontotoc County

American	1-Robertson	NW NE SW 19-5-5 E	
Louisiana	20-Perry	SW NW NE 19-5-8 E	

Pottawatomie County

Gypsy	2-Blandin	NWc NE 31-7-5 E	
Independent	2-Harding	NE SE NW 18-8-5 E	
Sinclair	1-Blandin	NWc SW 24-7-4 E	OWD
Sinclair	4-Blandin	NW SW SW 24-7-4 E	OWD
Sinclair	11-Blandin	SW SE SW 24-7-4 E	OWD

Seminole County

Texas	7-Lucy	NE NW NE 19-5-8 E	
Sinclair	2-Peter	NE NW NW 18-5-8 E	OWD
Texas	1-Lewis	SW SE NW 13-5-7 E	
Blackwell	2-Fleet	SE SW NW 13-5-7 E	
Slick	1-Simmons	NEc 26-6-6 E	
Shell	1-Glass	NWc SE 26-7-6 E	
Barnsdall	1-Barkus	SWc NE 26-7-6 E	
Gypsy	1-Johnson	NE NW SW 15-8-5 E	
Gypsy	2-Wisner	SWc NE 13-9-5 E	
Empire-Marland	1-Anderson	NE SE SW 13 9-5 E	
Slick-Skelly	7-Campbell	SW NE NW 6-9-6 E	
Slick-Skelly	6-Campbell	NW SE NW 6-9-6 E	
Sinclair	1-Thompson	NEc SW 18-9-7 E	
Shaffer	1-James	SEc NW 15-9-7 E	
Mid-Continent	6-Saloche	NW SW SW 33-10-6 E	
Mid-Continent	3-Nevins	NW SE SE 32-10-6 E	

Stephens County

Pace et al	1-Green	NWc SW NE 2-2-8 W	
Bunn-Marvin Drlg.	1-Williamson	NEc NW SE 12-1-6 W	

Tulsa County

Buckles et al	2-Brown	C NW SW 7-17-13 E	
Bailey et al	1-Unallotted	CNL SW 34-19-11 E	

Wagoner County

Peterson-Young	1-Mitchell	SWc NW 24-16-16 E	
Elk Drlg	7-Childers	NWc SW NW 22-18-17 E	

KANSAS

Butler County

Empire	15-Houston	NE SW SW 19-26-5 E	
Henderson-Holden	2-Morgan	SWc SE 14-27-5 E	

Sedgwick County

Flake et al	1-Van Vrew	SEc 18-26-1 E	
Bu Vi Bar Pet. et al.	2-Lyon	NWc SW 7-26-1 E	
Bu Vi Bar Pet. et al.	2-Wright	NEc SE 12-26-1 W	

Smith County

Mid-Kansas	1-Blank	NEc 4-2-13 W	

TEXAS

NORTH EAST CENTRAL TEXAS

Anderson County

Company	Well No. Farm	Location	Survey
Humble	1-Coleman	.....	Bullock
Humble	1-Todd	.....	Roberts
Humble	1-Todd	.....	Roberts

Brown County

Root	1-Robertson	Blk-3	SA&MG
Amerada	1-Guthrie	Blk-205	Anocha
Ramsey	5-Henson	Blk-147	Logan
Young Bros. et al.	7-Armstrong	Blk-151	Curlong
Young Bros. et al.	3-Butler	Blk-801	McGloin

Callahan County

Reiter-Foster	15-Hatchett	Sec-24	D&DA
Reiter-Foster	14-Hatchett	Sec-24	D&DA
Reiter-Foster	13-Hatchett	Sec-24	D&DA
Reiter-Foster	12-Hatchett	Sec-24	D&DA
Grass Root	6-Klutts	Sec-43	Comal Co. Sch. Ld.
Beddingfield-Welch Bros.	5-Cavanaugh	Sec-37	Comal Co. Sch. Ld.

Coleman County

Texas	4-Hayes	Sec-93	Saunders
States et al	3-Morris	Blk-190	Alexander
Amerada-Ross Drlg.	1-Hayes	Blk-92	Bond
Roth-Faurot et al.	1-Cox	Blk-15	BR&B
Roth-Faurot	1-Glover	Blk-201	Uaner
Atlantic-Urban et al	1-Gates	Sec-67 Blk-1	GH&H
Foster-Midsun	1-Hass	Sec-71 Blk-1	GH&H

Cherokee County

Humble	4-Weinberg Bros.	Blk-13	Trimble

Eastland County

Adams	2-McClelland	Sec-466	SP
Adams	2-McClelland	Sec-466	SP

Jack County

Ratblatt	1-Cantrell	Abst-2222	SP
Hayes et al	1-Knox	Abst-33	Buckner

Jones County

Sedgwick	1-Routh	Sec-355	Austin
Tomberlin et al	1-Horn	Sec-271	Penney
Marland	6-Mason	Sec-18 Blk-19	T&P
Marland	5-Mason	Sec-18 Blk-19	T&P
Texas	5-Carter	Sec-13 Blk-19	T&P
Texas	4-Carter	Sec-13 Blk-19	T&P
Snowden-McSweeney	5-Bickley	Sec-50 Blk-18	T&P
Mid-Sun	1-Hoehn	Sec-214	Crain
Cosden et al	7-Bickley	Sec-50 Blk-18	T&P

Palo Pinto County

Ashe Synd	1-Horn	Sec-36 Blk-4	T&P
Von Aryx	1-Jordan	Sec-1745	TE&L

Shackelford County

Tannehill et al	1-Mathews	Sec-29	ET
Amerada	1-McLennon	Abst-232	Stansell
Morton	1-Etzell	Sec-3	LAL
Mid Sun	1-Nail	Sec-91	ET
Texas	8-Sedgwick	Sec-1	ET

Stephens County

Zingery et al	1-Cooper	Sec-8	BAL

NORTH TEXAS

Archer County

Madden-Hunt	12-Richardson	Blk-7	SAR
Burns	1-Foerester	Blk-74	Harris
Howell et al	1-Taylor	Sec-17 Blk-12	ATNCL
McLaughlin Bros.	1-Jackson	Blk-133 Abst-2	Aldridge
Litchfield et al	1-Duncan	Abst-1181	Simmons
Johnson et al	10-Wilson	Blk-19	Geraldine
Texas	23-Richardson	Blk-7	SAR
Stumpf	1-Wilson	Sec-85 Blk-886	ATNCL

Cooke County

Stainforth-Wilder	1-Mitchell	Abst-1062	Toby
Stainforth-Skelly	1-Ware	.....	Dickson

Knox County

Dixie-Sun	1-Smith	Sec-46 Blk-2	DAW

Wichita County

United Prod	5-Hodge	Abst-139	HT&B
Comac Drlg. et al.	2-Bishop	.....	Netherly
Holbrook-Woods	27-Kemp	Blk-82	HT&B

Wilbarger County

Waggoner	6-Waggoner	Sec-24 Blk-4	H&TC
Waggoner	5-Waggoner	Sec-24 Blk-4	H&TC
Waggoner	4-Waggoner	Sec-24 Blk-4	H&TC
Texas	8-Waggoner	Sec-24 Blk-4	H&TC
Texas	7-Waggoner	Sec-24 Blk-4	H&TC
Baker et al	9-Waggoner	Abst-61	Purnell
Phillips	3-Waggoner	Blk-5 Sec-5	H&TC
Waggoner	8-Waggoner	Sec-24 Blk-4	H&TC
Waggoner	7-Waggoner	Sec-24 Blk-4	H&TC
Cochran et al	1-Waggoner	Sec-4 Blk-17	H&TC
Beasley et al	1-Waggoner	Sec-18 Blk-5	H&TC
Baker et al	10-Waggoner	.....	Purnell

Young County

Petroleum Prod	1-Baley	Sec-194	TE&L
King Royalty	12-Hawkins	Sec-1914	TE&L
Magnolia	6-Johnson	Blk-13	Sergeant
Dorian et al	12-Boone	Abst-34	BBB&C
Riggs et al	8-Sweet	Sec-1488	TE&L
Boller	11-Gragg	Abst-240	Rohus
Fultz et al	1-Scott	Abst-159	Johnson

WEST TEXAS

Pecos County

California	1-Smith	Sec-15 Blk-194	TC
Roxana	1-Smith	Sec-2 Blk-194	TC

Completions in Texas, Week Ended December 15, 1928

NORTH EAST CENTRAL TEXAS

Brown County

Company	Well Farm	Survey	Sec. and Blk.	Depth	Init. Prod.
Burris et al	9-Newton	Curlong	Blk-151	1191-1231	50
Humble	26-Hickman	Benson	Blk-783	1246-1250	19
Cranfill-Reynolds	15-Eubanks	Mitchell	Blk-141	1219-1233	60
Amerada	3-Wise	Clark		T.D. 628	Dry
Young Bros. et al.	1-Butler	Benson	Blk-783	T.D. 1301	Dry
Root-Rhodes	1-White	Evans	Blk-603	T.D. 1318	Dry

Callahan County

Humble	1-Seale	BBB&C	Sec-129	T.D. 776	Dry
Moutray	5-Hatchett	D&DA	Sec-29	T.D. 370	Dry
Grassroot	5-Klutts	Comal Co. Sch. Ld.	Sec-44	T.D. 540	Dry
Texas	10-Hatchett	D&DA	Sec-29	338-355	45
Reiter-Foster	11-Hatchett	D&DA	Sec-24	372-376	15
Reiter-Foster	10-Hatchett	D&DA	Sec-24	341-352	10
Reiter-Foster	8-Hatchett	D&DA	Sec-24	354-359	40
Reiter-Foster	6-Hatchett	D&DA	Sec-24	337-351	15
Eubanks-Son	3-Eubanks	Comal Co. Sch. Ld.	Sec-48	458-467	5

Coleman County

Texas	3-Hays	Bond	Blk-93	1136-1152	200
Ross Drlg.	1-Hays	Bond	Blk-92	1092-1147	3½M
McGahkey et al.	1-Overall	GH&H	Sec-10	765-777	5M
Cunningham et al.	5-Jennings	Lipscomb	Blk-94	1147-1155	75
Continental et al.	2-Overall	Barkley	Blk-7	2126-2131	136
Byrd-Golston et al.	3-Moody	Scott	Sec-12 Blk-665	1851-1865	10
Duncan et al.	2-Golson	Dockrill	Blk-180	T.D. 1085	Dry

Eastland County

Cranfill-Reynolds	1-Watson	Syfrett		T.D. 1380	Dry
Teatsworth et al.	4-Johnson	H&TC	Sec-11 Blk-4	1692-1786	12&¾M
Price-Soyles	1-Schmick	H&TC	Sec-1 Blk-4	1458-1460	2M
Allen-Ely	1-Schmick	H&TC	Sec-1 Blk-4	1592-1598	2M
Chestnut-Smith	1-Harrell	Conway		4158-4170	18

Haskell County

Superior	1-Reynolds	Fenner		1731-1732	45
Edminston et al.	2-Reynolds	Brock	Sec-4	T.D. 830	Dry
Edminston et al.	1-Scott	Bacon	Sec-143	T.D. 240	Dry

Jack County

Lindenfelter	1-Rudolph	Robbins	Blk-22	T.D. 807	Dry

Jones County

Phillips	4-Mason	T&P	Sec-18 Blk-19	T.D. 3043	Dry
Independent	1-Smith	T&P	Sec-51 Blk-18	2511-2517	600
Phillips	1-Weirdham	T&P	Sec-17 Blk-19	2448-2496	129
Snowden-McSweeney	2-Bickley	T&P	Sec-50 Blk-18	2505-2513	750

Palo Pinto County

Texas-Pacific	1-Robinson	T&P	Sec-56 Blk-3	T.D. 1750	Dry
Chestnut-Smith	1-Belding	AB&M	Sec-3	T.D. 2511	Dry

Shackelford County

Tannehill et al.	4-Mathews	ET	Sec-27 Blk-00	1143-1168	208
Roeser-Pendleton	25A61-Cook	ET	Sec-61	1348-1366	75
Roeser-Pendleton	24A61-Cook	ET	Sec-61	1357-1379	75
Roeser-Pendleton	83A60-Cook	ET	Sec-60	1173-1187	50
Cranfill-Reynolds	2-Flippen	T&P	Sec-34 Blk-11	896-902	7
Collett	1-Taylor	T&P	Sec-6 Blk-11	T.D. 933	Dry
Collett	1-Newell	ET	Sec-114	T.D. 1672	Dry

Stephens County

Dorothy	1-Thorpe	SP	Sec-456	1697-1700	5M
Wentz	1-Elliott	T&P	Sec-55 Blk-7	3920-4097	½M

Taylor County

Grisham-Hunter	1-Stephens	T&P	Sec-53	T.D. 2753	Dry

Throckmorton County

Company	Well Farm	Survey	Sec. and Blk.	Depth	Init. Prod.
Gilman-McMurray	1-Frazier	TE&L	Sec-914	T.D. 800	Dry
Baker-Credicat	2-Downing	TE&L	Sec-912	T.D. 460	Dry
Hays-Lewis	1-Carpenter	TE&L	Sec-944	T.D. 1568	Dry
Merry Bros. et al.	1-Tuggles	TE&L	Sec-910	T.D. 660	Dry
Stock et al	2-Cummings	Comanche Indian Res.	Sec-31	985-988	5
Woodson	1-Overcash	TE&L	Sec-960	1299-1306	30

NORTH TEXAS

Archer County

Madden-Hunt	11-Richardson	SAR	Blk-7	1294-1296	30
Madden-Hunt	1-Richardson	Scott	Blk-22	T.D. 1210	Dry
Humble et al.	1-Young et al.	Harris	Sec-126 Blk-14	T.D. 1502	Dry
Burns	1-Turberville	Jefferson Co. Sch. Ld.	Blk-20	T.D. 1255	Dry
Bridwell	1-Richardson	ET		T.D. 1505	Dry
Atlantic	1-Lyles	Hooper et al.	Sec-7	T.D. 1708	Dry
Texas	1-Wilson	H&TC	Sec-12 Blk-3	T.D. 1740	Dry
Shasta	1-Meade	Meade	Blk-35	T.D. 1471	Dry
Petroleum Prod.	1-Parish	Hooper	Sec-8	T.D. 1702	Dry
Panhandle	1-White	ATNCL	Sec-42	T.D. 1648	Dry
Magnolia	1-Robertson	Winters		T.D. 1586	Dry

Cooke County

Kewanee	3-Hayman	ET		1187-1204	12
Stoneman	1-Field et al.	Stanley		T.D. 1484	Dry
Elco	1-Field et al.	Allen		T.D. 1514	Dry

Hardeman County

Texas	1-Clisber	Reeves		T.D. 4310	Dry

Wichita County

United Prod.	2-Waggoner	George	Blk-36	T.D. 1329	Dry
Staley-Wynne	5-Kemp	HT&B	Blk-82	1458-1485	270 (18 Hrs.)
United Prod. et al.	1-Hodge	HT&B	Sec-1 Abst-139	1480-1497	28
Staley-Wynne	4-Kemp	HT&B	Blk-82	1461-1465	250
Hines-Panhandle	11-Waggoner	GC&SF	Blk-2	1368-1394	143

Wilbarger County

Staley-Wynne	3-Waggoner	H&TC	Sec-32 Blk-4	2408-2420	420
Simms	8-Waggoner	H&TC	Sec-5 Blk-5	1859-1881	50
Phillips	20-Waggoner	H&TC	Sec-42 Blk-4	2282-2368	20
Phillips	2-Waggoner	H&TC	Sec-30 Blk-4	1838-1847	10
Fain-McGaha	19-Waggoner	H&TC	Sec-24 Blk-4	2401-2410	750
Fain-McGaha	18-Waggoner	H&TC	Sec-24 Blk-4	2433-2440	800
Cosden	29-Waggoner	H&TC	Sec-31 Blk-4	2296-2319	130
Ross Dillard	5-Waggoner	H&TC	Sec-5 Blk-5	1861-1872	15
Barkley-Meadows	7-Waggoner	H&TC	Sec-5 Blk-5	1868-1875	125
Baker et al.	8-Waggoner	Purnell		1870-1893	250
Continental	4-Jones	Donoho		780-787	24
Texas	1-Waggoner	H&TC	Sec-2 Blk-5	T.D. 2368	Dry
Staley-Wynne	2-Waggoner	H&TC	Sec-32 Blk-4	T.D. 1922	Dry

Young County

Williams-Willis	2-Casey	TE&L	Sec-1486	T.D. 605	Dry
Petroleum Prod.	1	Crawford	Blk-E-18	T.D. 9490	Dry
Mook-Tex	11-Davis	TE&L	Sec-1487	T.D. 805	Dry
Burns	1-Stewart	Dawson		T.D. 854	Dry
Boller	10-Gragg	Rohus	Abst-240	T.D. 760	Dry
Riggs et al.	6-Sweet	TE&L	Sec-1488	558-566	10
Lynch-Whitehill	3-Johnson	Sergeant		512-527	6
Dorian et al.	1-Johnson	Sergeant	Blk-12	515-520	31
Schermerhorn et al.	4-Thompson	TE&L	Sec-2692	2090-2100	30

WEST TEXAS

Crockett County

Compton et al.	1-Univ.	Sec-15	Blk-50	T.D. 2225	Dry

Runnels County

Agnew et al.	1-Russell	Blk-13½		T.D. 4025	Dry

Completions in California, Week Ended December 8, 1928

Long Beach

Company	Well No.	Section	Depth	Init. Prod.
Bowles Oil	No. 4		5984	1136
Shell	Martin 5		7473	700

Santa Fe Springs

Shell	G. H. N. 13		5770	2750
Universal Cons.	Blanchard 8		5740	4560

Richfield

Continental Oil	Winann 1		4496	150
Johnson, Geo. W.	Davenport 1		3830	175

South Mountain

Company	Well No.	Section	Depth	Init. Prod.
The Texas Co.	Willard 8		3425	100

Cat Canyon

Palmer-Union	Stendill 17		3572	200

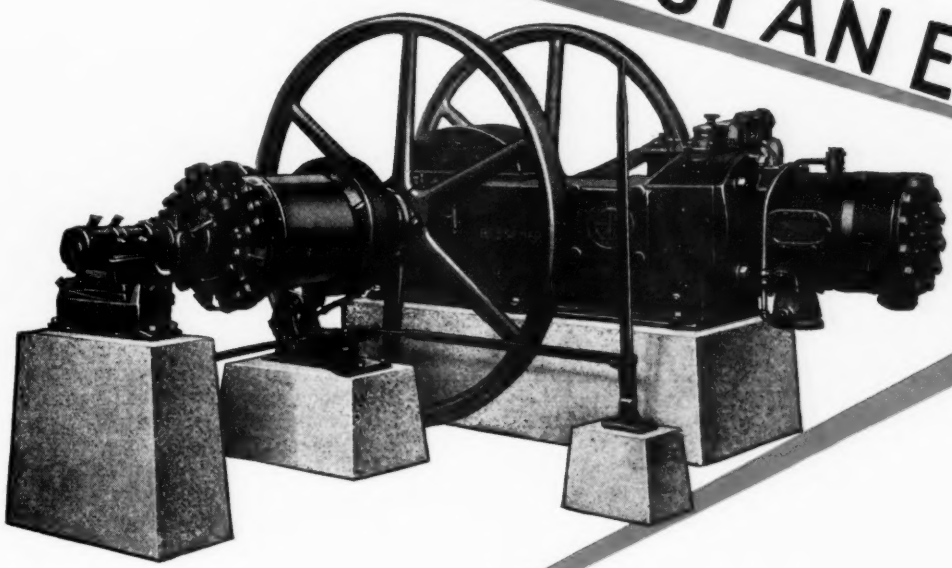
Fruitvale

Pacific Eastern Production	B-6		3884	850

Mt. Poso Creek

Bruce Frame	Dominion 2	28-26-28	1585	180

MORE THAN JUST AN ENGINE



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BESSEMER OIL FIELD ENGINES – COMPRESSORS VACUUM PUMPS – ROLLER PUMPING POWERS

Cost-Accounting for Oil Production

Service Department Cost Records And How This Expense Is Allocated

Article Four

By Lester C. Uren

Professor of Petroleum Engineering, University of California, Berkeley, Calif.

THE two preceding articles of this series have been devoted to a review of methods of determining labor, material, depreciation and depletion charges in oil and gas production. Having now at our command, an understanding of the methods of cost-accounting for these primary items of expense, we are in a position to consider the means by which they are combined in the make-up of cost records for different departments and for different phases of the work.

In the first article of this series, it was shown that the cost records kept by an oil producer fall naturally into three groups: 1. The Service Department cost records; 2. The "Suspense" cost records; and 3. The Operating or Production cost records. In the present article we shall be particularly concerned with the Service Department cost records.

The service departments include all departments of the organization that are not of themselves productive of oil, gas or natural gasoline—the major products of the enterprise. They are, on the other hand, productive of a service of one kind or another, necessary in the conduct of the business. They are engaged primarily in furnishing this service to the other departments.

The various shops necessary in the exploitation of an oil-producing property are typical service departments. Other departments have the function of developing and distributing power, water and electricity for lighting purposes; of providing transportation and communication service. In addition to these activities which we ordinarily think of as the products of service departments, we may conceive of a number of the more direct operations involved in the drilling, conditioning and operation of wells, as being conducted by service departments organized for these particular activities.

For example, we may have a well drilling department, a well repairing department, a well cementing department and other departments of similar character, engaged in providing various services in the development and operation of the property.

When this conception of the service departments is carried to the ultimate degree, almost every operation involved in the production of oil, gas or natural gasoline may be considered as being accomplished by one or another of a variety of different service departments. Some oil company cost-accounting systems provide for upwards of 30 different departments of this character.

Other Articles

OTHER articles in the latest Uren series, on cost accounting for producers, being published in NATIONAL PETROLEUM NEWS *were: Article* 1, *Oct.* 24, *page* 50; *Article* 2, *Nov.* 7, *page* 51; *and Article* 3, *Dec.* 5, *page* 51.

Since the service departments are theoretically not of themselves productive of oil, gas or natural gasoline—the primary products of the oil-producing company—they are, from the accounting standpoint, "closed out" monthly by distributing the total cost of producing their miscellaneous services among various other departments and operations benefited thereby.

The service department cost records are therefore often spoken of as the "distributing" cost records, because they periodically distribute their operating costs among their beneficiaries.

This periodic distribution of the expense of operating the service departments must be accomplished on some equitable basis. In all cases, the distribution will be in accordance with the benefits received, and total costs thus spread over the debtor departments will be proportional to the cost of the services rendered on whatever basis will more nearly express their relative values.

IN SOME cases, as in the shop departments, it will be possible to determine the actual cost of each job given attention during the month, and the distribution of the monthly expense of operating the shops among the departments served, will be in accordance with the actual cost of the work performed. If one-tenth of the cost of operating the machine shop during a particular month has been expended in the repair of drilling tools, then the well-drilling department will be charged with that amount.

Other departments, such as the power development and distribution department or the gas compression and distribution department may distribute their monthly costs of operation according to the number of units of service

MACHINE SHOP COST RECORDS

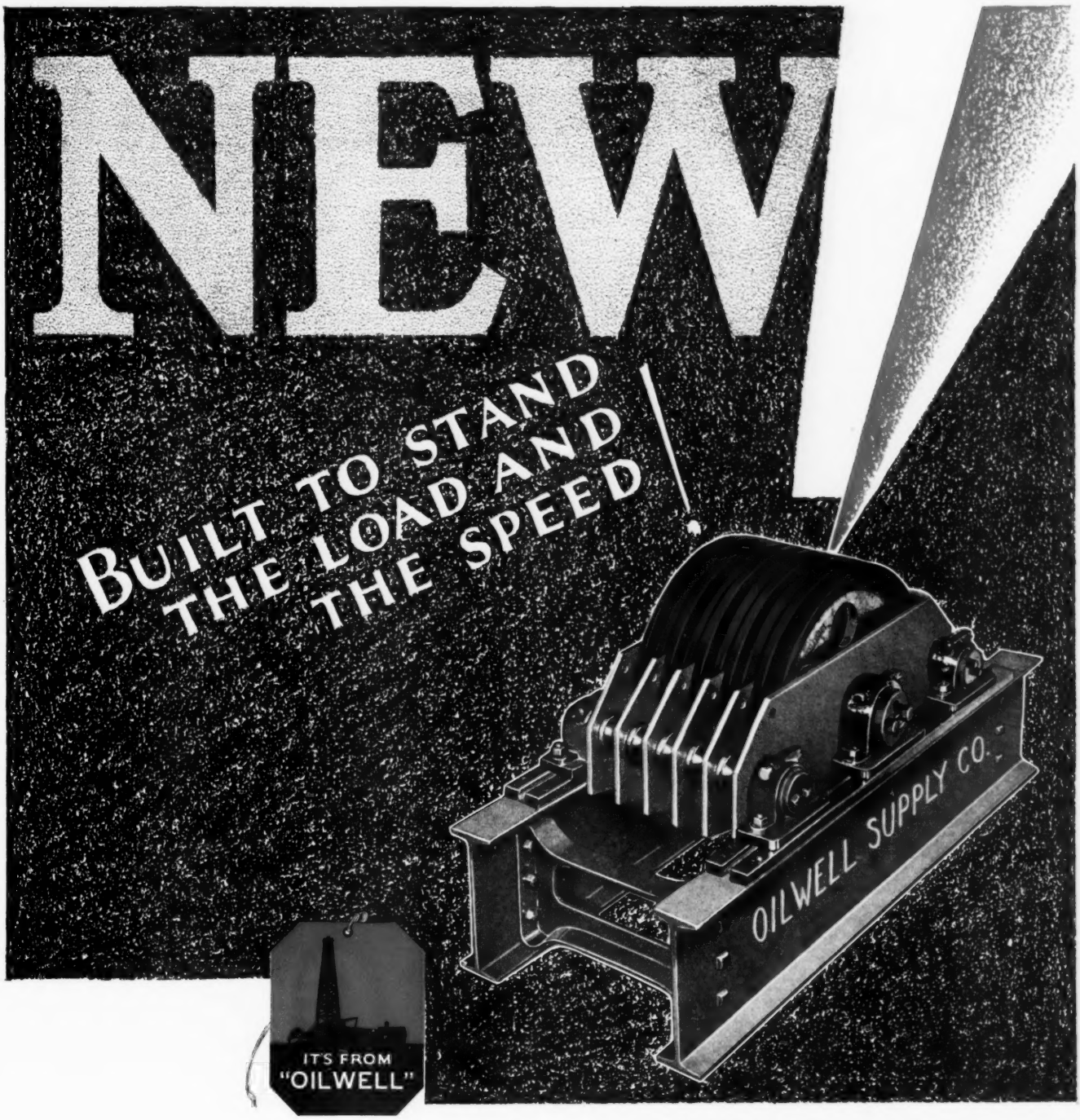
DIRECT MATERIAL REPORT — JOB No. 514.

Description of Work: Repairing plunger pump No. 36 <J>

Debit: Well Pumping Account.

Date	Req No.	Material	Cost		Date	Req No.	Material	Cost	
9-10-28	1782	Plunger	8	92					
"	"	Plunger bushing	1	67					
"	"	Plunger valve & seat	1	70					
"	"	Standing valve & seat	1	70					
"	"	St. valve packing rings	1	56					
"	"	Upper coupling	2	66					
		Total	$ 18	21					

Fig. 1—Form appropriate for recording storekeeper's allocations of direct material charges to determine total direct material charge attaching to a particular job



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MACHINE SHOP COST RECORDS

DIRECT LABOR REPORT — JOB Nº 514.

Description of Work: Repairing plunger pump No. 36. Debit: Well Pumping Account

Date	Workman	Hours	Cost		Date	Workman	Hours	Cost	
9-10-'28	Henderson	3	2	25					
9-10-'28	Brennon	2	1	20					
9-11-'28	Henderson	4	3	00					
9-12-'28	Henderson	1		75					
	Totals	10	$ 7	20					

Foreman: N. L. Lee

Fig. 2—Form appropriate for recording shop allocations of direct labor charges to determine total direct labor charge attaching to a particular job

MACHINE SHOP COST RECORDS

MONTHLY OPERATING EXPENSE — JULY, 19--- TO DEC., 19---

	Average Last 6-mo	July	Aug.	Sept.	Oct.	Nov.	Dec.	Six mo. Average
Shop Supervision								
Mechanics & Helpers								
Iron and Steel								
Bolts, Nuts, Rivets & Washers								
Lubricating Oils								
Tools & Tool Sharpening								
Miscellaneous Supplies								
Power								
Lighting and Heating								
Maintenance & Minor Reps.								
Depreciation								
Insurance & Taxes								
Miscellaneous Expense								
Totals								
Less Direct Labor Chgs.								
Net Operating Expense								

Fig. 3—Form appropriate for recording items entering into monthly machine shop operating expense

MACHINE SHOP COST RECORDS

INDIRECT EXPENSE DISTRIBUTION — JOB NOS. 496-540.

Job Nº	Direct Labor Hrs.	Indirect Charge		Job Nº	Direct Labor Hrs.	Indirect Charge		Job Nº	Direct Labor Hrs.	Indirect Charge	
496				511				526			
497				512				527			
498				513				528			
499				514	10	$ 1	14	529			
500				515				530			
501				516				531			
502				517				532			
503				518				533			
504				519				534			
505				520				535			
506				521				536			
507				522				537			
508				523				538			
509				524				539			
510				525				540			
Totals:											

Fig. 4—Form appropriate for recording distribution of machine shop indirect expense among jobs receiving shop service, on basis of number of direct-labor hours charged

supplied. If the steam power plant develops and distributes, say, 1000 horsepower, the total cost per horsepower will be computed by dividing the number of units of service supplied by the total cost, and the amount assessed against each consumer of steam power will be determined by multiplying the total number of horsepower furnished that consumer, by the unit cost.

Similarly, on a property producing gas under vacuum, the cost of compressing the gas and transmitting it to the various points of use, will be spread over the various gas-consuming departments by computing the cost per thousand cubic feet of gas delivered by the compressor plant and assessing each department with an amount equal to the product of the number of thousand cubic feet of gas consumed, by the unit cost. The cost per barrel of oil or per thousand cubic feet of gas handled, is an appropriate basis for distribution of expense in many of the service departments.

Another group of service departments, including the trucking department, distribute their cost of operation among the departments served according to the time occupied by the service department's facilities, these departments practically selling their services on an hourly rental basis. At times, other more appropriate methods of distribution may be used, but for most service departments operated in the interests of an oil producing company, one or another of the three methods suggested above, will be appropriate.

It will be impossible, within the space afforded by this article, to describe all of the many distributing or service department cost records that may be maintained by an oil producing company. An effort will be made, however, to outline the methods followed and to describe the forms used in developing the operating costs and in distributing the expense, for a typical service department representative of each of the above-mentioned groups.

It will be understood that records appropriate for any other department within each of the groups, may be developed and applied in similar fashion, perhaps with slight modification to accord with the varying character of service rendered.

The Machine Shop Cost Records

The writer has selected the machine shop as an example of the group of service departments in which costs are distributed among the departments benefited in accordance with the actual cost of the work performed. Cost records for each of the other shops customarily maintained on the oil producing property, may be similarly developed.

All work routed through the shops is handled on a "job order" basis, a system which was briefly explained

in the second article in this series. A separate "direct labor report" and "direct material report" is prepared for each job receiving attention. To these direct items of expense, a charge for indirect machine shop expense is added on a special "job cost summary" record card, to determine the total cost of each job handled.

The direct labor charges against each job are made up from daily reports furnished by each mechanic employed, showing how his time has been apportioned among the different jobs to which he has been assigned. Knowing the hourly wage that the mechanic receives and the total number of hours devoted to each job, the cost keeper may readily compute the direct labor charge.

Similarly, the total direct material charge may be determined by summation of items charged against the job by the storekeeper in his monthly materials consumed report. Forms appropriate for recording the direct material and direct labor charges, are illustrated in Figs. 1 and 2 respectively.

It will be noted that the total number of "direct labor hours" devoted to each job, is recorded on the direct labor report. This figure, as will be explained below, is the basis for distribution of the machine shop indirect charges.

THE direct labor and direct material charges having been thus determined, we have only to determine the amount of indirect machine shop expense to compute the total cost. For this purpose, we must assemble a record displaying the total cost of operating the machine shop during each month. To do this, we prepare a list of regularly recurring expense items on a cost record card, as illustrated on Fig. 3.

It will be noted that this record includes wages of all mechanics, all materials charged to the shop from the warehouse, other than those charged against particular jobs in progress in the shops, as well as miscellaneous distributed charges from other departments and shop "overhead."

The proportion of shop labor that has been charged against various jobs in progress in the shop, is deducted from the total shop labor cost, to determine the amount of labor to be charged against shop indirect expense. The total indirect shop expense may then be computed by addition of the various items thus recorded.

This amount is then distributed among the various jobs handled during the period, in the ratio that the number of direct labor hours expended on each individual job bears to the total number of direct labor hours. For example, if the total number of direct labor hours charged on the various machine shop direct

JOB COST SUMMARY

JOB No. 514.

Description of Work: Repairing plunger pump No. 36 <3">
Debit: Well Pumping Account

Department	Direct Labor		Direct Material		Indirect Expense		Total Cost	
Machine Shop	7	20	18	21	1	14	26	55
Forge Shop								
Welding Shop								
Pipe Shop								
Carpenter Shop								
Electrical Shop								
Sheet Metal Shop								
Rig Construction & Repair								
General Construction & Rep								
Lease Maintenance								
Trucking							1	36
Totals:	7	20	18	21	1	14	$27	91

Date Started: 9-10-28 Date Completed: 9-12-28

Fig. 5—Form appropriate for summarizing direct labor, direct material and indirect charges to determine total cost of a piece of repair or construction work

ELECTRIC POWER COST RECORDS

POWER DEVELOPMENT & DISTRIBUTION EXPENSE JAN. 19..., TO MAY, 19..

	Average Last 6-mo.	Jan.	Feb.	March	April	May	June	Six mo. Average
Plant Supervision								
Plant Attendents								
Linemen								
Electricians								
Natural Gas								
Tools								
Lubricating Oils								
Miscellaneous Supplies								
Maintenance & Minor Reps.								
Depreciation								
Insurance & Taxes								
Lighting & Heating								
Telephone Service								
Water Supply								
Miscellaneous Expense								
Totals								

Fig. 6—Form appropriate for recording items entering into monthly expense of developing and distributing electric power

ELECTRIC POWER COST RECORDS

DISTRIBUTION OF POWER EXPENSE JAN. 19..., TO JUNE, 19....

Power Generated, Kw.-hrs.
Cost per Kilowatt-hour

	Average Last 6-mo.	Jan.	Feb.	March	April	May	June	Six mo. Average
Well Pumping								
Well Maintenance & Reps.								
Well Drilling								
Oil Gathering								
Gas Compression								
Dehydrating Plant								
Machine Shop								
Carpenter Shop								
Electric Lighting								
Air Compression								
Water Supply & Distribution								
Absorption Plant								
etc.								
Totals								

Fig. 7—Form appropriate for recording monthly distribution of cost of electric power development and distribution among other departments receiving service

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SIGN MY NAME:

.....

labor reports, were say, 2000, and one job had received 20 direct labor hours, it would be charged with one one-hundredth part of the total shop indirect expense.

Fig. 4 presents a form suitable for recording the distribution of indirect shop expense among the different jobs handled in the machine shop department during each month.

The direct labor, direct material and indirect expense to be charged against each piece of work routed through the shops, is summarized on a "job cost summary" record card, as illustrated in Fig. 5. It will often happen that a particular job will receive attention in two, or perhaps several different departments.

For example, the building of a special fishing tool may require the preparation of a working drawing in the engineering department, machine work in the machine shop, forge work in the forge shop, and perhaps also, some welding or application of hard-facing metal in another department. In such a case, but a single job-cost record card will be used to summarize the records from the different departments having a part in the work.

The job-cost record cords provide the basis for journal and ledger entries in the accounting records at the close of each month, as well as further cost items on the cost records of the departments receiving the benefit of the work done in the shops. They also serve a useful purpose in aiding the cost keeper to estimate costs on similar jobs in future, and should be permanently classified and filed in some form that will facilitate future reference.

The Power Generation and Distribution Cost Records

As an example of a group of service departments in which the cost of operation is distributed in accordance with the units of service supplied, the writer proposes to outline a group of cost records appropriate for determining and distributing the expense of power generation.

Let us assume that the producer is operating his property by electric power which he generates in his own central power plant by a gas engine-driven generator, natural gas from wells on the lease being the fuel employed. Distribution of the cost of developing and distributing the power among the consuming departments is accomplished by computing for each month, the cost per kilowatt hour, charging each consuming department at the unit production cost rate in accordance with the quantity of power that it requires.

Fig. 6 presents a typical group of cost items for determining the total monthly cost of electric power development and distribution. A record is also maintained displaying the number of kilowatt hours of power generated and the cost per kilowatt hour, determined by dividing the total monthly cost by the number of kilowatt hours generated.

This record, as illustrated in Fig. 7, is combined with that displaying the distribution of cost among the consuming departments. It is here assumed that each well is pumped by an electric motor, and that motors are used as a source of power in the shops and elsewhere about the property wherever required.

The amount of power consumed in the different departments during each month, may be determined by installing watt meters, or, if conditions do not justify this, by periodically estimating or measuring the amounts of power used by the various plant units. Distributions of power expense thus determined, provide the basis for entries on the operating cost records in the various departments, as well as for periodic journal and ledger entries in the accounting records.

The Trucking Department Cost Records

As an example of a group of service departments in which the cost of operation is distributed on the basis of time occupied, the trucking department cost records will be briefly described. In this case, we maintain a record of the number of truck hours of service furnished each department and compute an hourly cost of truck operation or service charge, which is assessed uniformly against all departments receiving service.

This department, of course, is concerned with the moving of supplies and equipment about the property and in hauling freight from the railroad station, if such is necessary. The work of the trucking department is intimately related with many of the active accounts with which the cost keeper has to deal, and there are few departments which do not, for one service or another, become debtors to the trucking department.

One might think that the cost of

TRUCKING DEPARTMENT COST RECORDS

SUMMATION OF TRUCK-HOUR SERVICE CHARGES — OCTOBER, 1928

Days of Month:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total
Well Pumping																																
Well Maintenance																																
Well Drilling																																
Stores																																
Dehydrating Plant																																
Absorption Plant																																
Power Plant																																
General Construction & Rep.																																
Machine Shop																																
Forge Shop																																
Electric Shop																																
Pipe Shop																																
Welding Shop																																
Testing Laboratory																																
Oil-Gauging																																
etc.																																
Totals																																

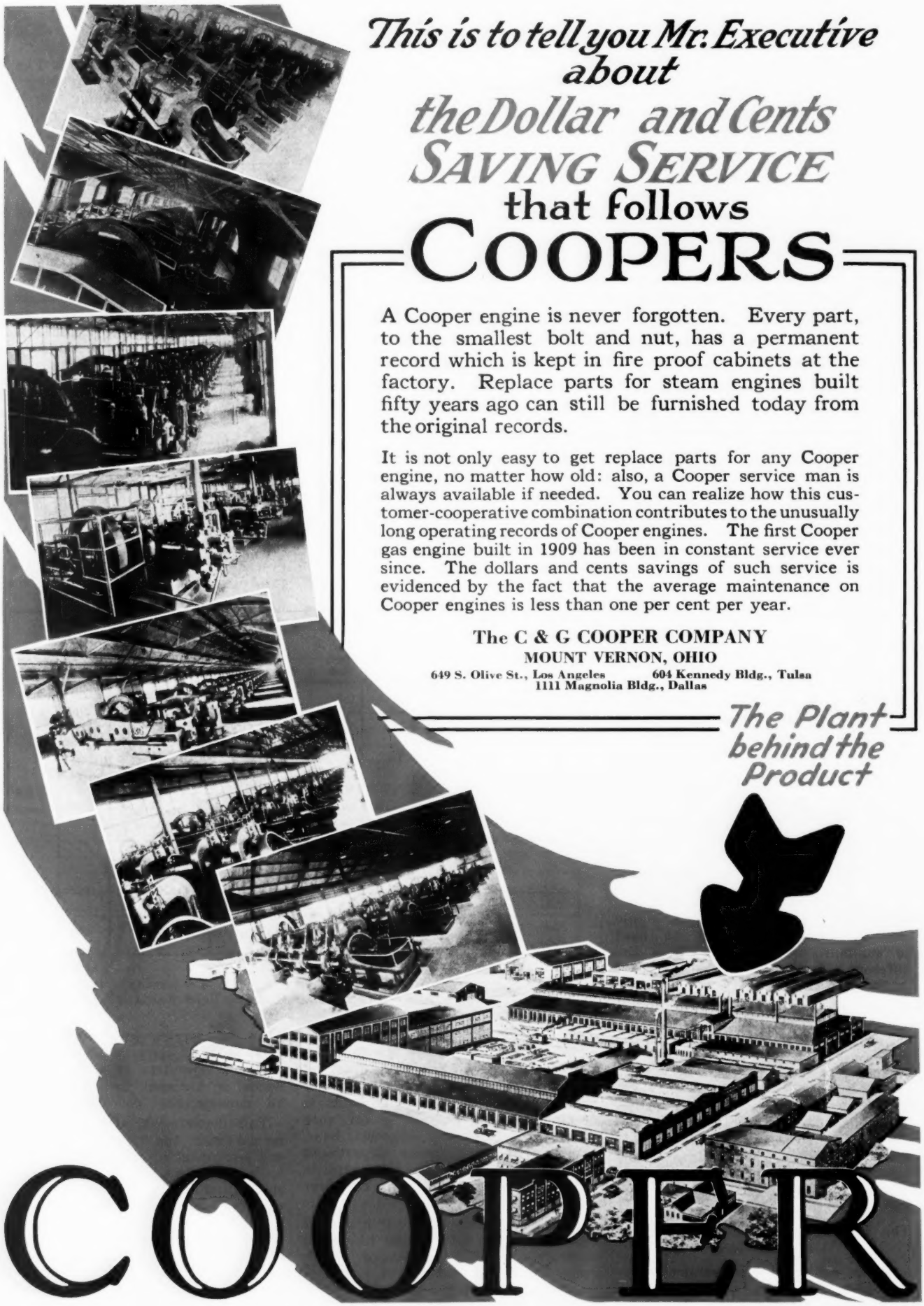
Fig. 8—Form appropriate for recording daily allocations of hours of service furnished by trucking department to other departments to determine monthly distribution of trucking expense

TRUCKING DEPARTMENT COST RECORDS

TOTAL COST OF TRUCKING — Jan., 19—, to June, 19—.

	Average Last 6 mo.	Jan.	Feb.	March	April	May	June	6 mo. Average
Truck Drivers' Salaries								
Loading & Unload. Assistance								
Gasoline								
Lubricating Oils								
Tires								
Maintenance & Minor Reps.								
Miscellaneous Supplies								
Tools								
Depreciation								
Garage Expense								
Taxes and Insurance								
Totals								
Total Time Engaged								
Cost per Truck-Hour								

Fig. 9—Form appropriate for recording items entering into monthly expense of operating trucking department


This is to tell you Mr. Executive about
the Dollar and Cents
SAVING SERVICE
that follows
COOPERS
A Cooper engine is never forgotten. Every part, to the smallest bolt and nut, has a permanent record which is kept in fire proof cabinets at the factory. Replace parts for steam engines built fifty years ago can still be furnished today from the original records.
It is not only easy to get replace parts for any Cooper engine, no matter how old: also, a Cooper service man is always available if needed. You can realize how this customer-cooperative combination contributes to the unusually long operating records of Cooper engines. The first Cooper gas engine built in 1909 has been in constant service ever since. The dollars and cents savings of such service is evidenced by the fact that the average maintenance on Cooper engines is less than one per cent per year.
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604 Kennedy Bldg., Tulsa
1111 Magnolia Bldg., Dallas
The Plant behind the Product
COOPER

trucking might be more properly distributed on a tonnage-handled basis than on a time basis, and this is sometimes the method adopted.

It is apparent, however, on consideration, that it would be difficult in many cases, to determine the tonnage handled. Then too, the cost of trucking is not directly a function of the tonnage, but varies considerably with the character of freight and the difficulty of loading and unloading.

For example, it may be unsafe to load as much dynamite on a truck as it is capable of carrying. It will be necessary to drive more slowly and carefully with this class of freight than with other material, such as a load of casing; and yet it costs nearly as much to make a trip over a certain distance with three quarters of a load as it does with a full load. Hence, the cost per ton is not constant.

A more precise unit, would be the cost per ton-mile, but this would again be difficult of determination because of the necessity for weighing all material transported. Generally, the oil producer will find it simpler to distribute his trucking costs on a time-occupied basis, though the method is perhaps not strictly accurate.

Daily reports from the individual truck drivers show how each truck and driver has been occupied during every hour of the day.[1] From these daily reports, the cost keeper posts the number of hours devoted to the work of different departments into a summarizing record such as that illustrated in Fig. 8, which affords a convenient means for computing the total number of truck hours per month chargeable against each department.

A record such as that illustrated in Fig. 9, is also maintained, showing the total cost of operating the trucking department. The amount of idle time for the month, expressed in truck hours, is subtracted from the total number of possible working hours for the period, to determine the net number of working truck hours. This number, divided into the total monthly cost of operating the trucking department, gives the charge per truck hour to be assessed.

Distribution of the cost of operating the trucking department among the various departments served, is accomplished at monthly intervals by multiplying the number of truck hours of service that each receives, by the current monthly unit charge. Allocations among the different departments are recorded on a form similar to that reproduced in Fig. 10, which may be conveniently kept on the reverse side of the card on which the record suggested in Fig. 9 is printed. Each month, the departmental charges so indicated, are posted to the various departmental cost records and job cost summary cards, and corresponding debit entries are made by the accountant in the ledger under the appropriate accounts.

[1]A typical truck drivers' daily report has been reproduced in Fig. 1 of the second article of this series. See NATIONAL PETROLEUM NEWS, issue of Nov. 7, 1928.

TRUCKING DEPARTMENT COST RECORDS.

DISTRIBUTION OF TRUCKING EXPENSE — Jan., 19---, to June, 19---.

	Average Last 6-mo.	Jan.	Feb.	March	April	May	June	Six mo. Average
Rate per hour:-								
Well Pumping								
Well Maintenance & Reps.								
Well Drilling								
Store House								
Gas Separating								
Oil Gathering								
Dehydrating Plant								
Natural Gasoline Plant								
Oil Gauging								
Machine Shop								
Forge Shop								
Power								
Tool Sharpening								
---etc.								
---Totals								

Fig. 10—Form appropriate for recording monthly distribution of cost of operating trucking department among other departments receiving service

Summary

This is the fourth of a series of articles reviewing the principles of cost-accounting and suggesting methods and forms appropriate for their practical application in cost accounting for oil production. The present article has been devoted to a discussion of the "distributing" or service department cost records. Appropriate forms and methods of control have been suggested for three service departments, each typical of a different method of distributing service department expense.

The next article of this series, which will appear in an early issue of NATIONAL PETROLEUM NEWS, will be concerned with the suspense and production cost records.

Seek Standardization Of Truck Tanks

CHICAGO, Dec. 15.—The motor transportation committee of the American Petroleum Institute will concern itself more with problems in the field of production in the future. During the recent convention in Chicago the committee almost completed its work of devising accident prevention measures in operating tank trucks.

For about two years the committee has formed a contact for the A. P. I. with the National Fire Prevention association and other groups interested in various phases of the problem of transporting flammable liquids but that work was almost completed this week.

At a busy evening session the committee approved a tentative draft of recommended good practice for construction and operation of tank trucks, as offered by the N. F. P. A. The draft was read, provision by provision, in open meeting. Most of it had gone through two or three regional meetings of the committee, so the work moved rapidly.

Discussing its own perpetuation, the committee agreed to continue to function, divided into three regional sub-committees covering the whole United States; however, there may be some slight changes in the geographical lines bounding the regions in which the three divisions work.

Standardization will be one of the committee's main objects, as far as tank trucks are concerned. It is the tentative plan to develop, if possible, standardization of certain dimensions on tank trucks and truck tanks so that an oil company may easily mount an old tank on a new truck—in as much as the average tank outlives two or three truck chassis.

Standardization of hitches on truck and trailer units also will be considered, with the hope of interchanging trailers among power units in the same fleet.

Other matters of mutual interest to truck operators in the field of production will come up for discussion in the committee later. It was hinted that field trucks, operating where roads are only routes, might benefit by having a standardized wheel base. Uniform cost accounting in truck operation will be considered by the committee also, it was decided.

NEW YORK, Dec. 15.—The next monthly meeting of the New England Oil Men's association will be held Jan. 9, at the Chamber of Commerce building in Boston. Plans will be made for the annual convention in February and also officers for 1929 will be elected. The December meeting of the Association has been omitted.

Educational Program for Field Men

Next Step in Standardization

CHICAGO, Dec. 17

AN EDUCATIONAL program that will bring to oil field men a definite knowledge of American Petroleum Institute standards, and the reasons why specified dimensions were adopted and should be put into field use was urged upon the Institute's division of Development and Production Engineering, in Chicago, Dec. 6, by Melbert E. Schwarz of the Rio Bravo Oil Co., Houston.

Mr. Schwarz's paper, which dealt with use of A.P.I. tubular goods in Texas, Louisiana and Arkansas, was a resume of the reasons given by operators for using special casing combinations under certain conditions; their reasons for specifying threads not of A.P.I. standard for certain pipe sizes; and their general attitude toward the use of A.P.I. standard casing, drill pipe and tubing.

The result of questionnaires had proved decisively, he said, that A.P.I. standard tubular goods are generally acceptable to producers and are being gradually adopted. In the majority of cases where A.P.I. standard tubular goods have not been adopted this had been found due largely to either a misunderstanding or to lack of knowledge about the specifications.

The situation applying to use of A.P.I. tubular goods of the several types discussed was summed up by Mr. Schwarz as follows, based on experience in the Texas-Louisiana-Arkansas district.

Casing

The major producing companies in the Texas-Louisiana-Arkansas district now show a decided preference for A.P.I. standard casing. Many of the supply companies in the area are ordering A.P.I. standard casing from the mills for their local stocks. Considerable old-style casing is still being ordered and used, but this is to be expected because practically all operating companies have some old-style casing on hand or are recovering some from abandoned wells. To utilize such material, it is necessary to purchase like material in order to complete the casing strings. This applies for the most part only to the larger sizes of casing, and is a circumstance which only time and continued drilling operations by the particular operators can eliminate.

In this district the most popular casings are among the special sizes listed in Table 1-A, A.P.I. Supplementary Standard Casing*. These were added to the original list of standard casings at the request particularly of this district. Many local operators and supply men are not aware that the supplementary casings have been adopted, however, and that the complete A.P.I. standards now comprise all reasonably necessary sizes of casing.

As an outstanding example, it may be cited that operators and supply men continue to specify old-style 6⅝-inch 10-thread casing and apparently are not aware that it is provided in the specifications as 7-inch O.D. A.P.I. standard casing. In this and similar cases, there should be no objection to specifying A.P.I. standard casing and, if the benefits to be derived from the more extensive use of the A.P.I. standard casing can be made known to these operators, they no doubt will comply willingly. Many smaller operators, however, follow the plan of using only what has been used in the past, and letting others work out the new ideas.

The problem squarely before the industry is to educate and convince some of the practical men in the field that the A.P.I. standard casings, although now specified under a different system of nomenclature include all of the sizes they are accustomed to using and that, by specifying the A.P.I. standard, they are assured of obtaining a better and more reliable product.

*A. P. I. Stds. No. 5-A, "Casing Drill Pipe and Tubing."

Leonard M. Fanning, recently made director of the public relations work of the American Petroleum Institute

The principal reason many operators in this area have been slow to use A.P.I. standard casing has been their objection to the acceptance of 10-thread on 8⅝-inch, 7-inch and smaller sizes, instead of the old familiar 8-thread. A real objection existed to the *old-style* 10-thread on account of the danger of cross-threading it, but this trouble now has been completely eliminated by the use of the new 35-degree bevel-angle in the recess of the new A.P.I. standard couplings.

Unfortunately, many operators have the erroneous idea that, if A.P.I. standard sizes are specified, it is permissible to specify a thread different from the standard because the desired thread may be specified on the larger A.P.I. standard sizes. The chief value of standardization lies in interchangeability, and this is dependent entirely upon having only one correct thread for each size of A.P.I. pipe.

Interchangeability is assured by the specifications on the master gages for a specific thread on a pipe of a specific diameter. There are no general national standards on the gage of threads. The standard A.P.I. gage, which measures a certain definite thread for a definite pipe size, therefore, must be specified; otherwise there can be no assurance that non-standard threads on the pipe of one manufacturer will make up with apparently similar non-standard threads on the pipe of another.

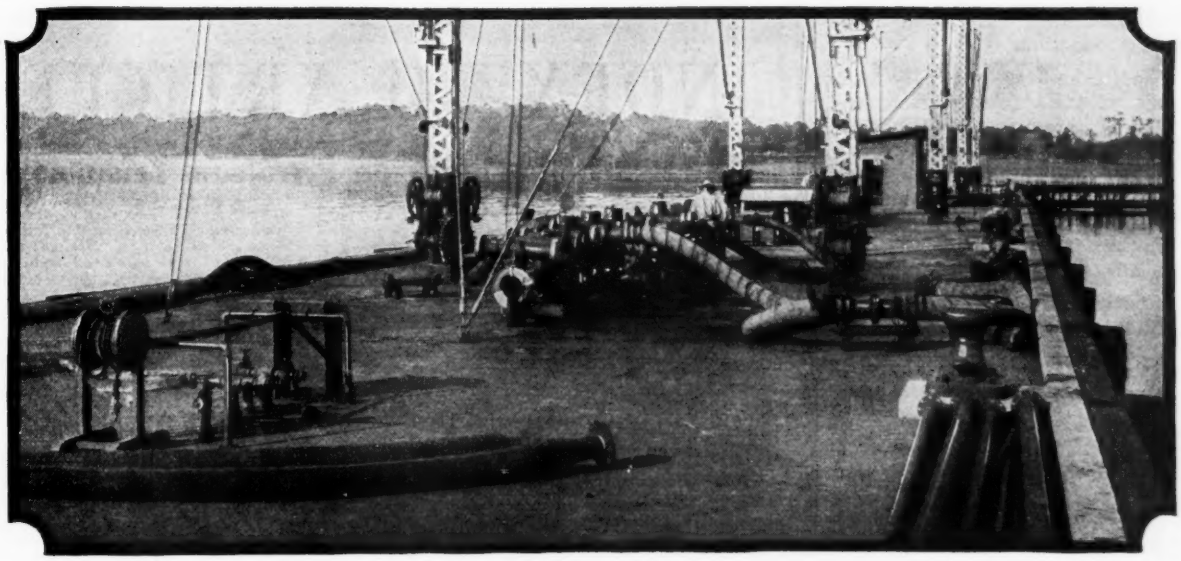
Drill Pipe

The adoption of the A.P.I. standard drill pipe has been universal among both the major and smaller producing companies in this district, with only a few exceptions among the smaller operators. The seamless interior upset drill pipe is used exclusively. The following sizes and weights are the most common:

Size (O.D.) Inches	Weight per Foot Pounds	Threads per inch
6-5/8	25.20	8
5-9/16	22.20 or 25.25	8
4-1/2	12.75 or 16.50	8
3-1/2	13.30	8
2-7/8	10.40	8

Tubing

The adoption of A.P.I. standard tubing in this area has been delayed considerably due to the large stocks of old-style tubing which most of the larger companies have on hand. For the most part, however, where wells are being equipped with a complete new tubing strings, the tubing is



One of the loading docks at a Gulf Coast refinery

A TRIUMPH of Scientific Design —a Product of Chemical Skill!

AFTER extensive chemical research and experiment, Goodrich has developed a long-lived, trouble-free Oil Suction and Discharge Hose which embodies a proper balance of woven cotton fabric, internal wire support and wire winding.

A leading oil company reports an average service of 574 hours per length for 68 lengths of suction and discharge hose. 31 lengths were Goodrich, with an average of 771 hours' service. The other 37 lengths were of various makes, with an average of only 470 hours' service.

Goodrich Suction and Discharge Hose resists high pressures and high vacuums. Has great strength and flexibility and gives long service, proving correctness of design.

For longest life, for least cost per barrel of oil handled, always specify Goodrich.

THE B. F. GOODRICH RUBBER COMPANY
Established 1870 Akron, Ohio

Goodrich OIL SUCTION AND DISCHARGE Hose

A.P.I. standard, particularly in areas of new oil production.

Plain end tubing is generally used for depths of 2000 feet or less, and seamless exterior upset tubing for greater depths. Some operators specify the old-style 11½-thread on 2½-inch seamless upset tubing, it being their contention that the finer thread makes a better tubing joint and one less likely to leak.

The experience of a large number of operators shows that the A.P.I. standard 10-thread joint on tubing will not leak if it has been made up properly. Another contention is that the old-style 11½-thread on 2½-inch seamless upset tubing makes a stronger joint than the A.P.I. standard 10-thread. This point has little real merit because the actual strength of the pipe at the upset end has been increased so materially by the upset that, regardless of the increased material cut away in making the coarser thread, the coupled threaded upset end remains stronger than the body of the pipe which has not been upset.

The following sizes of tubing are in most common use in this area:

Nominal Size Inches	Weight per Foot Pounds	Threads per inch
Plain End		
2	4.60	11½
2½	6.40	11½
3	8.70	11½
Upset End		
2	4.70	10
2½	6.50	10
3	9.30	10

Virtually all of the producers in this district are in hearty accord with the standards developed by the A.P.I. and the majority either have already accepted or, as soon as practicable, will accept the A.P.I. standard program of tubular goods. The universal interchangeability that has been effected by rigid inspections of material and workmanship is of utmost importance to the petroleum industry as a whole and is the strongest selling point for the A.P.I. standardization program.

Eldorado Refining Names Representative

ELDORADO, Kans., Dec. 15.—E. D. Gallagher has been made traveling representative of the Eldorado Refining Co. for Iowa and Missouri. His headquarters will be in Kansas City. His selection is in line with the Eldorado Refining Co.'s recent announcement that a sales division would be formed to distribute the bulk of the plant's production to jobber accounts.

Mr. Gallagher first entered the oil business as an employe of the Mutual Oil Co. of Kansas City. When the Mutual was absorbed by the Continental Oil Co. he remained with the new company for a year, later resigning to go with the Interstate Oil Co. of Kansas City.

INDEX TO ARTICLES

Selected Bibliography on Petroleum Technology

Editor's Note—The brief abstracts of current literature printed below are so arranged that they may be cut apart and mounted on 3" x 5" library indexing cards. The indexing numbers assigned bring the cards into logical sequence in the files. The "Decimal Index of Petroleum Technology" gives the key to the articles. This book is published exclusively by NATIONAL PETROLEUM NEWS as a service to its readers. Price $1.00. Abstracts started April 4, 1928.

L. A. Mekler

"Recent Developments in Heat Generation and Application in Petroleum Refineries"

National Petroleum News, Oct. 17, 1928, pp. 67-80.

A major problem in connection with the generation and use of heat in refineries is the use as fuel of heavy residues and unsalable products that are often difficult to handle. Heavy residues can only be handled by means of a circulating system which keeps them in constant turbulent motion and so prevents any heavy precipitation of the solids they contain. In extreme cases when the percentage of solids is high, the residue is heated and mechanical agitation by means of paddles in the supply tank is resorted to to keep the solids in suspension and the material is in a sufficiently fluid condition to be handled by the pumps.

Loop line systems for burning such heavy semi-solid fuels are described and illustrated. Types of burners and burner orifices to burn such fuels are discussed. Design of furnaces with particular reference to combustion tunnels are discussed. Burning of cracking still coke under stills and boilers, both in powder and solid form is discussed and results obtained from such firing shown in table form.

Various types of pipe stills are described and their respective methods of applying the heat to the oil.

Use of proper refractories and design of furnaces to give maximum length of operating cycle with minimum damage to furnace linings is taken up, along with some of the insulation problems.

D. G. Brandt 741.

"Better Fractionating Equipment Saves Heat"

National Petroleum News, Sept. 26, 1928, pp. 91-93.

Describes pipe stills in which roof tubes are extended over the entire roof and up the back wall above the tube bundles. Inasmuch as these heaters were for cracking equipment having an oil inlet temperature of 750 degrees F. air preheaters were used to preheat the air for combustion and the flue gases were recirculated back into the fire box to reduce the fire box temperature and increase the gas velocity and temperature difference over the tube bundle.

"With these additions were able to reduce the excess air to a minimum and equalize the work done over the entire heating surface which materially increased the capacity per square foot of heating surface over previous designs.

"These heaters operate with a fire box temperature of 1400 degrees F. and a stack temperature of 375 degrees F. with an oil inlet temperature of 750 degrees F. The flue gas analysis will compare with that of good boiler practice and thermal efficiency under test conditions is about 80 per cent.

"Later developments of this heater have been again to increase the radiant absorption surface by using a thin diaphragm to separate the tube bundle from the combustion chamber or installing a baffle behind the first row next to the combustion chamber. Other modifications are to lengthen the flame travel before adding the recirculation gases and rearrangment of ducts and hot fans." The author also discusses operation of fractionating (bubble) towers.

D. R. Lederer 741.6 742.1

"Corrosion in Refineries Menaces Profits, Health and Life; Some Suggestions"

National Petroleum News, Oct. 3, 1928, pp. 22-25.

Atmospheric corrosion caused by presence of carbonic acid, hydrogen sulfide, sulfur dioxide and hydrochloric acid in the air. Palliative: Painting and coating of metals with special corrosion resisting paints; treating of woodwork with creosote; regular testing and examination of electric wiring, conduits and motors.

Water Corrosion: Water containing high percentage of salts or acids makes poor steam which corrodes valves and steam lines causing leaks. Pits and weakens flue sheets and fire box sheets by electrolytic action sometimes causing boiler explosions. Use of salt water for cooling accelerates corrosion of condensers and so on.

Palliatives: Frequent and careful chemical analysis of refiner water before used for boiler feed or cooling. Selection of proper metal for coils and tubes.

Soil Corrosion: Attack on pipes from acids or alkalies in the soil naturally or through seepage of sludge, spent acid, wash water and so on.

Palliatives: Chemical analysis of soil in which pipe line is to be laid and coating or wrapping of pipe.

Corrosion from Chemicals: This is the most serious. It comes chiefly from sulfur content of crude oil and subsequent formation of hydrogen sulfide and sulfurous acids.

Palliatives: Neutralizing of charging stocks with ammonia, line or soda; rigid inspection of materials of equipment at frequent intervals by trained inspectors. Extreme vigilance during runs supervised and checked by foreman, plant engineer and superintendent. Special care and attention must be given to installations where large vessels are used for expansion chambers under pressure as they have been known to lose as much as 1/16-inch per month in thickness by corrosion.

Tilton, John L., Prouty, William F. and Price, Paul H. 111.14

Geologic and Topographic Report on Pendleton County

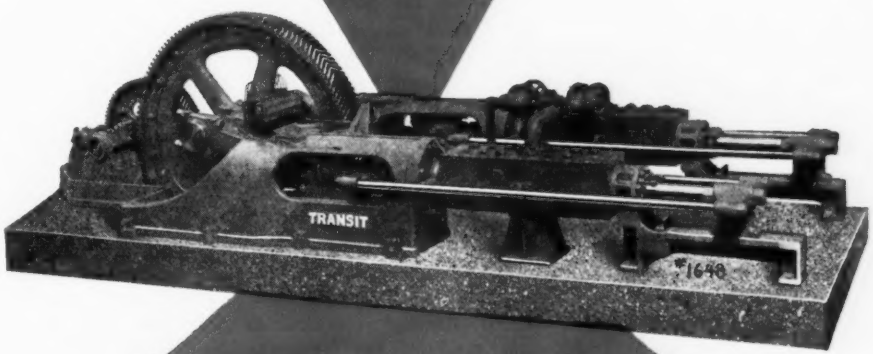
West Virginia Geological Survey

Pendleton county is in the southeast part of the state. This is one of the series of county reports, nearly all of West Virginia having now been so treated. The authors find that there is little chance of finding either oil or gas in commercial quantity in Pendleton county.

TRANSIT PUMPS

For Every Refinery Need

All types - all sizes
For steam, power
or electric motor
drive.



A 4¼ x 13" Duplex Power Pump, with forged steel fluid end. Used as a charging pump to deliver 128 barrels of oil per hour, at atmospheric temperature, against 1050 lbs. pressure.

Representatives

FRICK-REID SUPPLY CORPORATION
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of California
Los Angeles, California.

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NATIONAL TRANSIT
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St. Louis, Mo.

Sulfuric Acid Barred as Treating Agent In Anglo-Persian Refineries

By Dr. A. E. Dunstan*

Presented before American Petroleum Institute Meeting, Chicago, Dec. 3-6, 1928

* * * *

I THOUGHT it might be appropriate this evening in connection with the problem of desulfurization merely to discuss the experience that we have had in Persia with a sulfurous crude and a natural gas containing upward of 14 per cent of hydrogen sulfide. Those conditions are conditions that you are well familiar with on this side.

Taking the Persian crude oil in our main field, we have an oil of a paraffin base with about 1½ per cent of hard asphalt and with a sulfur concentration of a shade over 1 per cent. That oil is a perfectly sweet smelling oil.

The first point I want to draw your attention to is the malodorous sulfur derivatives that appear in the distillates are in all probability decomposition compounds brought about by a decomposition of sulfur-containing bodies in the crude. That is actually true because if you take the ordinary crude and distill it under ordinary conditions you get a gasoline containing 0.1 or 0.2 per cent of sulfur. If that same crude is just gently flocculated with a small amount of acid and allowed to stand to precipitate the asphalt, and then is stilled, the same gasoline fraction would only contain about 0.025 of sulfur and would be reasonably sweet smelling.

When the Anglo-Persian Oil Co. decided some 12 years ago to apply all its resources in chemical science to the problems of oil refining, we found that the accepted practice in the refinery was to wash the crude gasoline, with acid and soda and the result was that very little improvement was made in the smell. We had to investigate all of the known methods of achieving desulfurization.

In parenthesis I might perhaps say a word or two about the general problem of desulfurization. I suppose the first gasoline we had in Europe was of Pennsylvania origin with a specific gravity of about 0.68. It had a beautiful smell resembling that of petroleum ether. This, of course, spoiled the market for all time for other gasolines. Every subsequent gasoline had to bear comparison with that spirit.

One often wonders if the first gasoline had arrived from Texas or Persia, whether we should have saved a vast amount of time and money in the researches we had to go through. After all, one must regard the desulfurization of gasoline from the point of view of practical politics.

I am giving vent now to a heterodox statement:— People like to have a spirit which they feel doesn't smell too bad. That is about all they are concerned about. The actual numerical content of sulfur is another matter that does not trouble them.

Provided your gasoline hasn't any elemental sulfur, which is bad from every point of view, hasn't any hydrogen sulfide or evil smelling mercaptans, I do not see that the actual sulfur content is a thing to worry about. I say that particularly when you realize that in the diesel and in the semi-diesel engines it is quite customary to burn fuels containing upwards of 3 per cent of sulfur content.

In approaching this problem of sulfur content in gasoline we first of all determined what sort of chemical sulfur compounds there were in the gasoline, and leaving out hydrogen sulfide we isolated a whole series of mercaptans and sulfides. Some disulfides were present and a trace, probably 0.01 of what might be called cyclic sulfur compounds.

In working out the refining scheme one naturally turns first of all to the removal of hydrogen sulfide. If you do not remove hydrogen sulfide at the earliest possible moment it will be air-oxidized into free sulfur and no reagent known will remove the free sulfur from the petroleum distillate. If you leave the free sulfur in the gasoline you are going to have trouble with corrosion all the way through.

IN ACTUAL practice we get our soda washing, or alkali washing done at a very early point, either in the condenser or immediately after condensation. That soda wash really serves two purposes. It removes hydrogen sulfide and to a certain extent it removes mercaptans. If the mercaptans are left in they also tend to oxidize into disulfides.

The removal, then, of acid bodies by alkali is of first importance. By using counter current treatment you can economize on soda and furthermore you can also—and we are doing it at the moment—use ordinary lime water as a remover of these acid materials.

So then we proceed, having eliminated hydrogen sulfide, to remove the mercaptans. The lower the molecular weight of the mercaptans the easier the work of the caustic soda solution. Some mercaptans will only dissolve to the extent of about 30 per cent in a soda wash that would remove the whole methyl mercaptan and hydrogen sulfide. You get an equilibrium but you never get complete removal by that means. We had to turn to some other method of re-

Cracked Distillates Our Problem

DR. DUNSTAN is an uncompromising enemy of sulfuric acid as a chemical treating agent of refined products, even lubricating oil, as he sets forth in this paper.

He is also known as one of the most active chemists in the development of the hypochlorite treating method. All treating of light oils in the Anglo-Persian plants is done with hypochlorite and soda and the results are satisfactory, he points out.

While some chemists feel that the possibilities of hypochlorite treating in this country have not been thoroughly explored, the point should be borne in mind that our problem is chiefly the treating of cracked distillates while in England, the problem so far, is confined almost exclusively to the treating out of bad-smelling sulfur compounds out of straight run gasoline, although it is gasoline made from a high sulfur crude. Also, the British refiner does not have to meet a sulfur limit in his motor fuel.

Use of roasted bauxite as a filtering medium for kerosene is also touched upon in this article.

*Chief chemist, Anglo-Persian Oil Co.

moving sulfide and the balance of the mercaptans.

Our early work was based on oxidation. We took up the idea of using hypochlorous acid which was an obvious line of attack. We also used bleaching powder but we soon found ourselves in trouble. The whole point of the hypochlorite treatment is this, that the salts hydrolyze to form hypochlorous acid and that is the active agent. The more alkali you put in the more you drive the equilibrium to the side of the salt and reduce the concentration of the free hypochlorous acid, and the more you slow down the reaction the more specific the reaction becomes.

Let us take a few cases that can be illustrated. If you oxidize a mercaptan with hypochlorite then your main product is a disulfide. If you take, on the other hand, an alkyl sulfide, you get sulfones and with a disulfide you get acidic products. In some cases we have actually isolated a trace of ordinary free sulfuric acid. If that acid increases in concentration it neutralizes the alkali previously put in and you may get a rapid reaction setting in when free hypochlorous acid is produced.* * * *

We make our hydrochlorite solutions now by passing chlorine from the tank cars into milk of lime and by a curious circumstance at the moment when you have the right amount of chlorine in the mixture, the color changes from white to pink, a permanganate being formed, and it gives the operators very excellent indication of the course of the reaction. This strong calcium hydrochlorite, 0.2 to 0.2½ normal in strength, is diluted to 0.3 normal and it has just about the right concentration of free alkali to prevent this sort of reaction going on.

After the operation, the treated gasoline is merely washed with soda to remove traces of acid bodies produced and in point of fact to remove the very minor traces of chlorine compounds that are formed. By using a counter current treatment we get a sulfur content of an ordinary gasoline, of about 0.03 or 0.035 per cent and a chlorine less than 0.1 per cent.

But, if by any chance the alkali concentration has been allowed to become too small, then you are in trouble with chlorination. The whole thing depends on the accurate concentration of the alkali.

By that means and using hypochlorite to sweeten the mercaptans and to sweeten the lower odoriferous sulfides, the cost of a ton of gasoline treated from 0.1 sulfur, down to 0.035 sulfur, is about 3½ cents a barrel.

As a sweetening agent you have a substance there which is prepared easily, is easy to apply and has no messy residual to remove or to recover. All the Persian gasoline that we are making now is desulfurized or sweetened in this way.

There are cases, of course, where

SECO RETURN BENDS

Seco Type A Return Bends and Terminal Fitting. Note the smooth, frictionless interior and the simplicity of the Seco patented method of locking the fitting to the tube.

Four Important Features Found in no Other Fitting

No. 1. Seco Return Bends, because of their uniform cross-sectional area, stream line interior and absence of pockets in which carbon can accumulate, lower friction to the irreducible minimum.

No. 2. They can be installed by common labor in a fraction of the time required by boiler makers rolling tube ends in other fittings.

No. 3. They can be removed by simply unscrewing four nuts, so that any tube may be removed for inspection or replacement without cutting or disturbing adjacent tubes.

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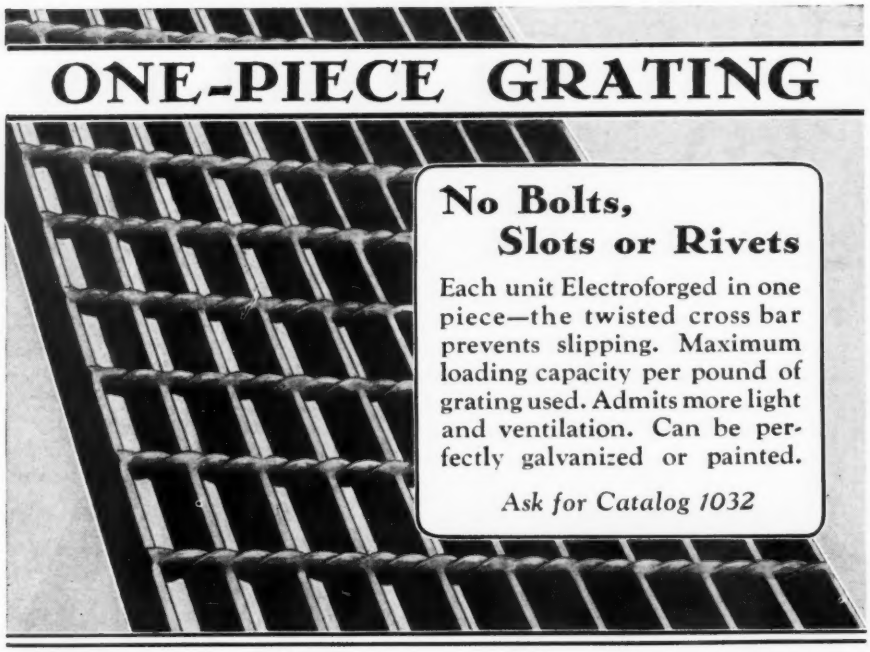
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you want to get a lower sulfur content than that. One important one is that of the white spirit used in dry cleaning. That is the middle fraction between gasoline and kerosene, falling between 130 and 140 degrees C. and 200 degrees C. Much of that white spirit is recovered by redistillation.

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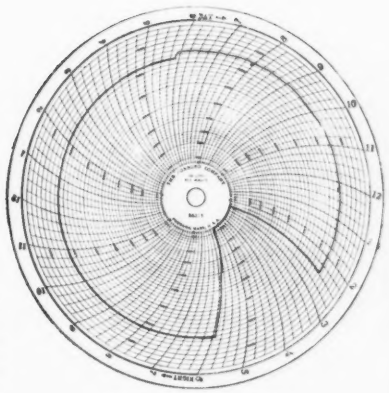
Passing on now to the kerosene. We had in the early days in our refinery a process derived from the Burma Oil Co. In the Burma oil refineries for many years past they have used for decolorizing wax, a heated, roasted bauxite, a local Indian mineral. They had found that by passing the melted wax through the heated oxide a very much better decarbonization took place than by using various chars.

We started in Persia, in 1912 or thereabouts, using bauxite for decolorizing our kerosene.

We used a combination of the litharge and bauxite processes and prepared a merchantable kerosene. In the course of experiments dealing with he more efficient roasting of the bauxite and having had the advantage of reading David Day's earlier work on adsorption, and having followed the work that Gurwitsch did on the same subject, it occurred to us that possibly by getting the bauxite particles more effectively roasted and at different temperatures there might be the possibility of a specific adsorption of sulfur derivatives.

It turned out that, if the bauxite were roasted and used immediately before having had time to get in contact with moisture and adsorb various impurities on its active surface, you had a desulfurizing agent of very considerable efficiency. Careful experiments indicated that first of all the bauxite reacted with the color in the kerosene and when the coloring matter had gone, then it would again adsorb the various compounds in the kerosene.

We showed, for example, that by using very, very large proportions of bauxite as against kerosene, 8 pounds to a gallon, almost 100 per cent by weight, that we could bring a kerosene of sulfur content of 0.2 or 0.25 down to the order of 0.02 or 0.03. Up until almost the last year all our refineries have been desulfurizing and decolorizing our kerosene by filtration through specially roasted bauxite and used before it



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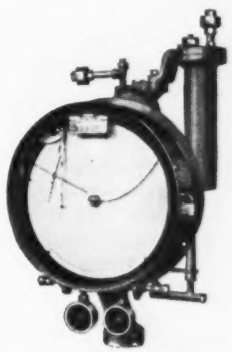

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THE COMPASS OF INDUSTRY

Instruments for Controlling, Recording and Indicating Temperature, Flow, Humidity and Pressure

An aerial service station of the Anglo-American Oil Co., Ltd., at Brooklands Aerodrome, near London, England. The station is equipped with three five-gallon pumps. The photograph was taken during an informal meet of private owners of airplanes. It was sent to National Petroleum News by H. Stuart Tegner of the technical sales department of the Anglo-American Oil Co.

had cooled down and adsorbed material from the air.

During the course of that work in the refinery, one or two curious anomalies turned up from time to time which were put down to mistakes in roasting, to using very sulfurous waste oil for heating the furnaces, and so on. Anyway, these anomalies turned out to be due to the presence of mercaptans slipping through the bauxite and resulting in a kerosene that was positive to the doctor.

We traced out a curious fact in this particular material. It turned out that if the bauxite, for example, is roasted in a current of carbon dioxide, after it has been thoroughly burned, or roasted in nitrogen, or in hydrogen, it had not the faintest affect in adsorbing mercaptans.

But, if it is roasted right through in the presence of air and as pure air as possible, the mercaptans then disappear. That can only be legitimately accounted for on the supposition that the roasted bauxite does adsorb a certain amount of oxygen in the roasting operation, and the oxygen reacts with the mercaptan to form a disulfide, which is then adsorbed on the bauxite surface.

Up to a few months ago we used bauxite exclusively for kerosene. Only just now, this very moment, we have in operation in Persia, one of the largest Edeleanu plants, capable of processing over 1000 tons a day (about 7000 barrels) of kerosene and in the future all of our kerosene in Persia will be desulfurized by that process, removing sulfur compounds in the sulfur dioxide layer and finishing refined oil with possibly 4 or 5 per cent by weight of bauxite ,just to give a final polish to the kerosene.

I would like here and now to say this, that during the 12 or 13 years in which I have been able to experiment personally with the sulfur dioxide method I have gotten more and more faith in the method as an entirely scientific method of removing objectionable material without the attendant losses that would be gotten in the ordinary chemical processes, more particularly with strong acid. In fact, I may almost say that my career as a technologist has been one long fight against sulfuric acid.

One passes from the kerosene side to some of the higher products. Let us take, first of all, the residue from skimming. In our case it is a 65 per cent residue on the crude, and this material is an ideal internal combustion fuel for heavy engines of the diesel and semi-diesel variety.

When I first had occasion to deal with this material as a diesel fuel, we had a committee sitting in London, a diesel engine committee, which had the business of formulating specifications for diesel oils. Ten years ago the great bogey in diesel oil was sulfur. If an oil contained more than 0.4 or 0.5 per cent of sulfur it was damned forever as a diesel oil. I suppose there are echoes of that damnation still about us. The evil, of course, lies in the sulfur dioxide produced in the combustion chambers and the corrosion thereby of the moving parts. However, after years of hard work the committee was convinced that much larger amounts of sulfur were innocuous and the bogey of sulfur disappeared.

That was then replaced for three more years by the bogey of asphalt. All trouble was ascribed to asphalt. If the hard asphalt went up to 3, 4 or 5 per cent inevitably you would wear out cylinder liners, trouble occurr d and you wouldn't get complete combustion. That bogey disappeared and the current one is that the trouble in the diesel oil is the dirt, the adventitious matter that people will not take the trouble to centrifuge out.

The question of desulfurization of internal combustion fuels, therefore, does not arise in our particular case. Passing on, then, to the lubricating oil side, we must bear in mind that some anxiety has been caused in lubricating oil manufacture by the difficulty or impossibility, shall we say, of adequately desulfurizing the oil and yet maintaining it as a lubricant.

It is perfectly easy to take a lubricating oil base and wash it with oleum and have a loss of 50 per cent and get a water white material. The more you treat a lubricating oil the less lubricating quality you get. If you react on a lubricant with excessive acid, you certainly and definitely remove just those bodies which are so effective in maintaining the stable film that is essential for boundary lubrication.

We had again, in our own oil, this problem that the lubricating oil fractions contained sulfur compounds. What is to be done about it? The more thoroughly those sulfur compounds were removed the less the oil lubricated.

In that connection, again, I would like to say that in all probability the removal of the more highly reactive components by physical means, rather than chemical, would probably be a fitting solution in the end.

I might say a word or two on the refining or desulfurizing of the various cracked spirits that one comes across in a refinery. Here again it is clear that the ordinary attack by acid not only produces heavy losses but also removes from the cracked spirit precisely those compounds you want there for anti-knocking properties.

In our own case, we at the present moment are cracking gas oil, and cracking heavy residue by means of Cross and Dubbs plants, and it is not astonishing that if you take one of those cracked spirits and refine it down to what might be called conventional standard of color, and of odor, to note that you have produced a material which has the same anti-

knock value as the straight run spirit from the same crude.

There is a case in which there is no doubt a large amount of education necessary in Europe. For the utilization of material that has no particular bad smell or bad color, has a characteristic odor and color, this education will take a lot of time, but it will come inevitably.

There again the treatment that will be adopted in the future in all of these cases will be a treatment more definitely physical than chemical. We are watching with great interest on our side, the attempts made here in the way of treating cracked spirit vapors over polymerizing material in the nature of fuller's earth. That appears to me a line of extraordinary promise.

I merely want to mention one point in the question of desulfurization that occurs in our natural gases which run up to 14 per cent or thereabouts of hydrogen sulfide. There we found a very simple and effective method based on the Claus process used for a long time in England, in which the gas is mixed with air and then passed through a contact bed, in which a simple reaction takes place that is thus: $H_2S\ 3\ O = H_2O\ 3\ S$.

The Englishman Wants Quick Starting; He's Not So Worried Over Knocking

By Paul Truesdell
N. P. N. STAFF WRITER

WHEN the British motorist tramps on the starting button on a snappy morning he wants the car to start and start right away. If it refuses to kick off instantly, if it stutters and halts and hesitates, he straight-way looks for another gasoline.

In this he is not different from his American brother, except that, if anything, he is a little less patient over delay in starting. The Britisher does not want his car to knock, either, a feeling that he also shares with us; but he is not concerned with the knock quite as much as he is with securing quick starting, largely because the knock itself is not quite the factor in English motoring that it is here. The Englishman's nose, too, is pretty sensitive; he will not stand for a bad smelling gasoline.

These are observations of Dr. A. E. Dunstan, chief chemist of the Anglo-Persian Oil Co., with headquarters in London. Doctor Dunstan, who has been nominated for president of the Institution of Petroleum Technologists of England, to take office next March, was a visitor at the meeting of the American Petroleum Institute, having come over some time ago to attend the second International Conference on Bituminous Coal which was held in Pittsburgh last month.

He delivered a paper at that conference and also a talk at the Institute meeting on desulfurization of oil.

The English market has always demanded a gasoline of good volatility as the exporting companies know, but it is only comparatively recently that much attention has been paid to the anti-knock characteristics of the fuel. This is primarily because such fuels were less needed in British cars than in our own.

The majority of the cars built in England are of low horsepower and extremely small bore. It is well known that with cars of small cylinder cross section where the flame travel is short, a much higher compression can be used without causing knocking than in an engine with larger cylinders.

Anti-knock fuels are still selling in small volume in England compared with those which make no particular claim to that value.

British gasoline specifications are simple, according to Doctor Dunstan, being based on a single point in the distillation range, that is, the percentage over at 100 degrees C. or 212 degrees F. There is no sulfur limitation and no damage seems to result. Four chief grades or types of gasoline are generally marketed in England.

The largest selling grade is the so-called Commercial grade, which corresponds in the position it occupies in the mind of the English automobile owner with the ordinary competitive grade of gasoline retailed in this country.

The controlling requirement for this gasoline is that 30-35 per cent must distill below 212 degrees F. Initial boiling point is about 130 degrees F. and the end point about 375 degrees F. This gasoline retails at about 32 cents an English gallon, including tax. The Imperial or English gallon contains 5 quarts and the tax on all gasoline is 8 cents a gallon.

The next grade is the so-called No. 1 spirit which must show 40 per cent over at 212 degrees F. It has an initial of about 130 and an end point of about 400 and sells at about 36 cents per Imperial gallon, including tax.

Aviation gasoline, which is the army and navy fuel for fighting airplanes, is sold for use in motor cars to those who are willing to pay for a luxury fuel. This sells at about 40 cents per gallon, tax included. It shows 65 per cent over at 212 degrees F. and an end point of about 300.

Recently Ethyl gasoline has been put on the market in England. The marketers of this anti-knock fuel have recognized the demand of the motoring public for easy starting because they use the No. 1 spirit as the gasoline to be ethylized. They charge a premium of 4 cents a gallon over the price of the straight No. 1.

In addition to these, there is a so-called National benzol mixture which contains varying amounts of benzol. This fuel is retailed to the public somewhat cheaper than gasoline of corresponding anti-knock value because the benzol is the product of British coke ovens and carries no tax. There are a number of benzol mixtures being marketed by various companies, all claiming their share of the business.

None of the companies marketing in England own their own filling stations, Doctor Dunstan says, the great preponderance of the gallonage being sold by the garages. Pumps such as are used in this country, are rapidly shoving into the discard the tin cans in which gasoline was formerly retailed.

Despite the high tax on automobiles and on gasoline, motor transportation is rapidly growing in England, according to Doctor Dunstan. The government taxes automobiles according to horsepower and this leads to the practice of making cars of very low horsepower. Many of the small cars built in England are of 7 horsepower, as compared with 24.9 horsepower for the old Model T Ford. The horsepower is calculated according to the S.A.E. rating.

These cars will travel some 45 to 50 miles on a gallon of gasoline. The tax is about $5 per horsepower so it costs the motorist about $35 a year in taxes to run one of the small cars.

These small cars, which sell for

about $500, seat 4 persons and give good service.

Because of their small horsepower and consequent low tax rate, motorcycles enjoy a popularity in England greater than in almost any other country.

Despite the tax and operating costs, motor buses are very popular and are growing in numbers all the time. This is also true of motor trucks. A number of the old style steam driven trucks are in service but they are being displaced by the gasoline truck. Great progress is being made in adapting the diesel engine to truck use.

According to Doctor Dunstan's estimate, about 42,000,000 barrels of all petroleum products are used every year in the British Isles. About 25 per cent of this amount is refined in England at the plants of the Anglo-Persian Oil Co. at Swansea, Wales, and at Grangemouth, Scotland.

England has always taken its gasoline straight run, being prejudiced against the cracked product, but the time is rapidly coming when cracked gasoline will become an important factor in the market, Doctor Dunstan thinks.

While the Anglo-Persian at present is making only a very small quantity of cracked gasoline, its technologists are carrying on extensive research work on various types of cracking, under the direction of Doctor Dunstan.

Dubbs and Cross units are installed at the Swansea refinery, as well as cracking equipment invented and developed by Doctor Dunstan himself and there is considerable work being done on the cracking of natural gas.

The development of the diesel engine for automotive use is a factor that is likely to affect the cracking situation in England, in Doctor Dunstan's opinion. While in the United States, with its great supplies of gasoline and its relatively small available supply of gas oil, the use of diesel engines in trucks seems improbable, in England the case is different.

Gasoline there is expensive and gas oil is relatively cheap. Gas oil also would be available in sufficient quantity to supply many trucks.

He believes therefore, that in time, gas oil will be practically all taken for automotive fuel and only the heavy residual oils left as a cracking stock. Of course, eventually the use of trucks may outrun the supply of gas oil and run up the price to a high level, but this seems not to be likely for a considerable time.

Providing of motor fuel for automobiles in England is likely to be a job of constantly increasing requirements, as in this country. The streets of English cities are becoming cluttered with thousands of buses, trucks and private cars while the country roads of a Sunday afternoon are often strung with mile after mile of cars as in this country.

There are a considerable number of American cars used over there, the Buick and Chrysler especially being very popular with those who are able and willing to afford the initial cost, taxes and operating costs. The new Ford has not yet made its appearance in England, Doctor Dunstan says.

International News Reel, Photo

The refinery of the White Eagle Oil & Refining Co., Augusta, Kan., under five feet of water during the recent Kansas flood

Many Factors Affect Safe Limit For Gum in Gasoline

By V. Voorhees* and J. O. Eisinger*

Presented at American Petroleum Institute Meeting, Chicago, Dec. 3-6, 1928

ALTHOUGH there are some references to the harmful effects of gum in gasoline engine fuel, the writers have been unable to locate any published report of experimental work which shows these effects in a quantitative way, making it possible to define the permissible gum content.

Undoubtedly one of the main reasons for this lack of accurate data on engine performance with gum-containing gasoline is the general disagreement on the requirements of a quantitative method for measuring gum in gasoline. In this paper we will first discuss gum formation and methods of testing and then we will show the correlation between testing methods and engine performance.

The method which has been most widely used for lack of anything better is the copper dish test. In this connection H. C. Dickinson[1] says, "The commonly used copper dish method of test is distinctly wanting in reproducibility of results and brings many difficulties in standardization." This test was devised for testing aviation gasoline during the war and consists of evaporating a 100 cubic centimeter sample in a copper dish on a steam bath to constant weight. As will be shown later, this test, because of its simplicity, is useful as a rough measure of potential gum formation or gumming tendency, although conceded to be incapable of accurate reproduction.

Another test sometimes used is the sunlight test. Certain gasolines, when exposed to light in a glass bottle, will deposit a layer of resin. This has been taken as a measure of gum stability, but it has little value since much of the gum formed in gasoline is soluble and does not precipitate. Furthermore, it is not essential that gasoline, which is usually stored away from the light, be light stable, and many stocks are known which are gum free and perfectly stable but which will deposit gum when placed in the light for a short time.

B. T. Brooks[3] believes that gum in gasoline is merely the end product of polymerized peroxides. The necessity for oxygen in gum formation has also been shown by Smith and Cooke.[4]

The objections to the copper dish test are the poor reproducibility due to lack of oxidation control, the failure to discriminate between gum already formed and that which is formed during the test, and the possible catalytic effect of copper which is not usually met with in actual storage. These variations are greatly accentuated by the fact shown later, that gum formation appears to be an auto-catalytic reaction which speeds up rapidly after an initial induction period. Obviously, what is needed is an accelerated aging test combined with a means of determining the non-volatile resin formed. M. B. Cooke,[5] working at the Bureau of Mines, showed the necessity of evaporating gasoline samples in the absence of air when determining non-volatile residue, and he described a test for this purpose.

This test has been used with some modifications and has been found to give very satisfactory results as a measure of the gum actually present at a given time. It should be emphasized, however, that the method does not indicate how much gum may be formed in storage—in other words, it does not measure "gum stability."

Gasoline Oxidation

A. Oxygen Absorption Test

On the assumption that gum formation in storage was due to slow oxidation, it seemed advisable to study the oxidation of gasoline at various temperatures. For this purpose, samples were placed in bottles with oxygen and heated to temperatures as high as 260 degrees F., at which temperature the oxidation was quite rapid. At 210 degrees F. the oxidation rate was moderately rapid, so this temperature was selected for further experiments because of its easy attainment by the use of steam.

Samples were shaken in a long necked Pyrex flask surrounded by steam and connected to a mercury manometer and an oxygen burette as shown in Fig. 1. By observing the fall in pressure, the rate of oxidation could be easily followed. Measured amounts of oxygen could be admitted as desired. Many different gasolines varying widely in their susceptibility to oxidation were tested in this way. In all cases, however, there ensued a distinct induction period, during which time the oxidation rate was very low and relatively constant. This phenomenon suggests that

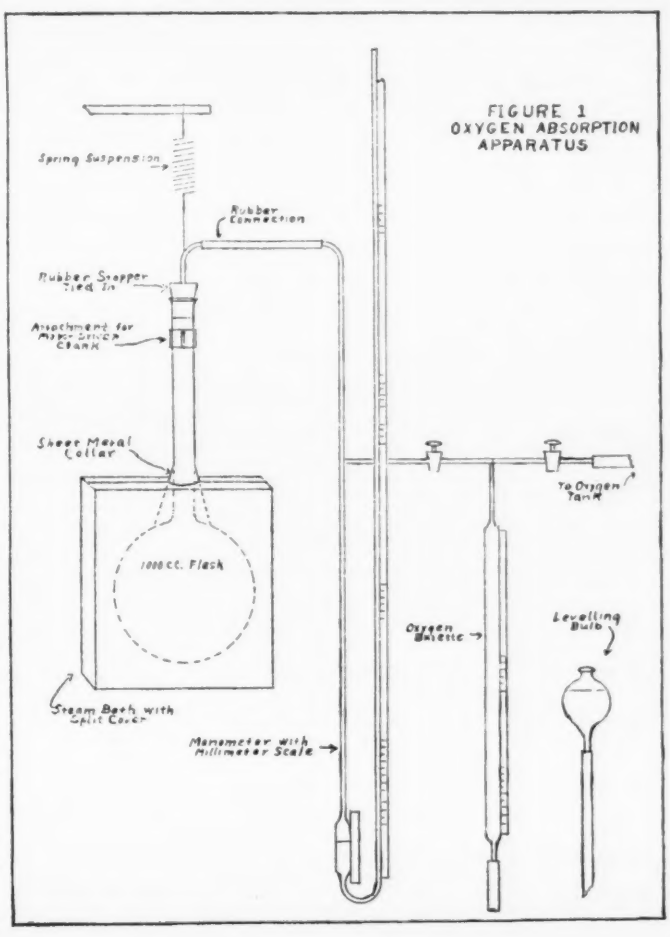


FIGURE 1
OXYGEN ABSORPTION APPARATUS

[1]Chem. & Met.—May, 1926, p. 293.

*Standard Oil Co. of Indiana.

[3]J. Ind. & Eng. Chem.—(1926) p. 1198.

[4]Smith and Cooke.

[5]Bur. Mines Report—Serial No. 2686 (1925).

the oxidation of gasoline is of the auto-catalytic type and that the differences between different samples are more in the length of the induction period than in the rate of oxidation once this has passed. It is obvious, therefore, that the resistance of a gasoline to oxidation can best be measured by the duration of the induction period. When this has passed and oxidation is well begun, the time required for the formation of a large amount of gum is very short and the more stable stocks oxidize at about the same rate as the unstable ones.

Furthermore, the amount of gum which can be formed seems to depend only on the oxygen supply and the time of heating, at least within reasonable limits. In one experiment there was obtained 12 per cent of gum with no indication of decreasing oxidation rate.

When oxidized samples were avaporated in a steam atmosphere, it was found that for any given gasoline there was a relatively constant relation between weight of gum produced and oxygen absorbed. This fact indicates that gum formation, at least under these conditions, is a result of oxidation only. Typical data are given in Table 1.

Table I

Relation Between Oxygen Absorption and Gum Formation—Gasoline Sample 20

Exp. No.	Time of Oxidation Min.	Wt. of Gum Gms.	Wt. of Oxygen Absorbed per 100cc. (Gms.)	Ratio Oxygen/Gum
1	105	.298	.392	1.31
2	145	.932	1.049	1.12
3	150	.961	1.08	1.12
4	363	2.758	3.37	1.22

B. Actual and Potential Gum

In order to classify a gasoline with respect to gum it is necessary to know not only the amount of actual or preformed gum, but also the tendency toward gum formation—the potential gum. Thus, for example, we may have on the one hand stable, non-gum-forming gasoline which has become contaminated with a little gum or other non-volatile residue in handling or blending.

Such a stock might give a considerable amount of gum in Cooke's steam oven evaporation test, and yet not form more gum on long storage.

On the other hand we have a cracked gasoline which, because of poor refining or other reason, has a short oxidation induction period but, being a freshly distilled stock, contains little or no gum detectable by Cooke's test. We will show later that such a gasoline, because of its high potential gum, would contain more actual gum after a few months' storage than the previously mentioned contaminated stock.

C. The Steam Oven Test

The oven used for this work was a sheet metal box placed within a Freas electric oven. A slow current of steam was led into the bottom of this box through a perforated pipe, escaping at the top. Fifty cubic centimenter samples of gasoline were used instead of 20 cubic centimeter samples, as described by Cooke, in order to obtain greater accuracy with low gum gasolines.

They were evaporated in 200 cubic centimeter Pyrex dishes placed on a shelf in the oven. When the gum content is excessive, there is a tendency for the gum to creep down the outside of the dishes but loss is prevented by supporting the dishes at three points. The temperature was kept at 320-350 degrees F., as it was found that at this temperature samples could be evaporated to constant weight in 10 hours, whereas at lower temperatures, a much longer time was required. In one experiment at 212 degrees F. it was not possible to attain constant weight in 48 hours. Cooke used wet steam but completed evaporation in an air oven. This has been avoided as it was found that the resin would take up oxygen when heated in air and increase in weight.

D. The Oxygen Gum Test

For the purpose of routine determination of gum stability, a method was devised which is referred to as the oxygen gum test. It consists of heating a sample of gasoline with oxygen at 210 degrees F. Instead of measuring the amount of oxygen absorbed, the amount of gum produced after heating for a given period is determined.

Five hours was selected as the time of heating, as it was found that gasolines known to be bad offenders from the standpoint of gum formation were appreciably oxidized, and those gasolines which were free from gum trouble even when stored for a considerable period were not oxidized in this length of time.

The gum stability requirement of a gasoline will depend largely on the time elapsing between its manufacture and consumption. If some of it is likely to be placed in storage for six months or a year before use, it will have to be considerably more stable than if consumed soon after treating and distillation. With the oxygen gum test it should be easy to establish a gum stability requirement rigid enough to insure freedom from gum troubles in any reasonable length of time during which the gasoline might be in storage. In the storage period must be included a possible several weeks or even months in the gasoline tank of an automobile which might stand idle for a long time, and yet be expected to give no trouble on starting up again. The temperature of storage would also have a considerable effect on the degree of stability required to avoid trouble.

The rate of gum formation in the oxygen bomb is slow during the induction period, after which it increases very rapidly. Therefore the amount of gum which is formed under a fixed condition of oxidation is not a direct measure of stability, i.e., two gasolines may differ by many fold in weight of gum, but only a few per cent in duration of induction period. The significant thing is whether the gasoline does or does not form an appreciable amount of gum in the duration of the test.

The test is carried out in the following manner: Five hundred cubic centimeter round bottom, long necked Pyrex flasks are carefully cleaned with acid and distilled water and dried by heating and aspirating. After filling with oxygen, the sample is run in from a 25 cubic centimeter pipette. Since pressure is developed on heating, it is necessary to close the flask with a rubber stopper tied on.

The flasks are placed in an actively boiling steam bath, allowing only the necks and stoppers to protrude. After exactly 5 hours' heating, they are cooled and the contents transferred to dishes and evaporated in the steam oven. It is necessary to rinse the flasks to transfer precipitated gum. For this purpose a mixture of benzene and alcohol has been found suitable, as it is an excellent solvent and has no effect on the subsequent evaporation.

Stable gasolines have given from 2 to 10 milligrams of gum by this test (8-40 mg. per 100 cc.), whereas unstable stocks have given as high as 500 milligrams of gum.

E. Gum Stability of Gasoline by the Copper Dish and the Oxygen Gum Methods.

One of the disadvantages of the copper dish test as a means of predicting gum stability is that the volatile portion of the sample evaporates rapidly and is thus exposed to atmospheric oxidation but a short time. A gasoline of high end point will give a great deal more gum than one of low end point, although made from the same stock.

In storage, however, the light portion will form gum just about as rapidly as the heavy portion.

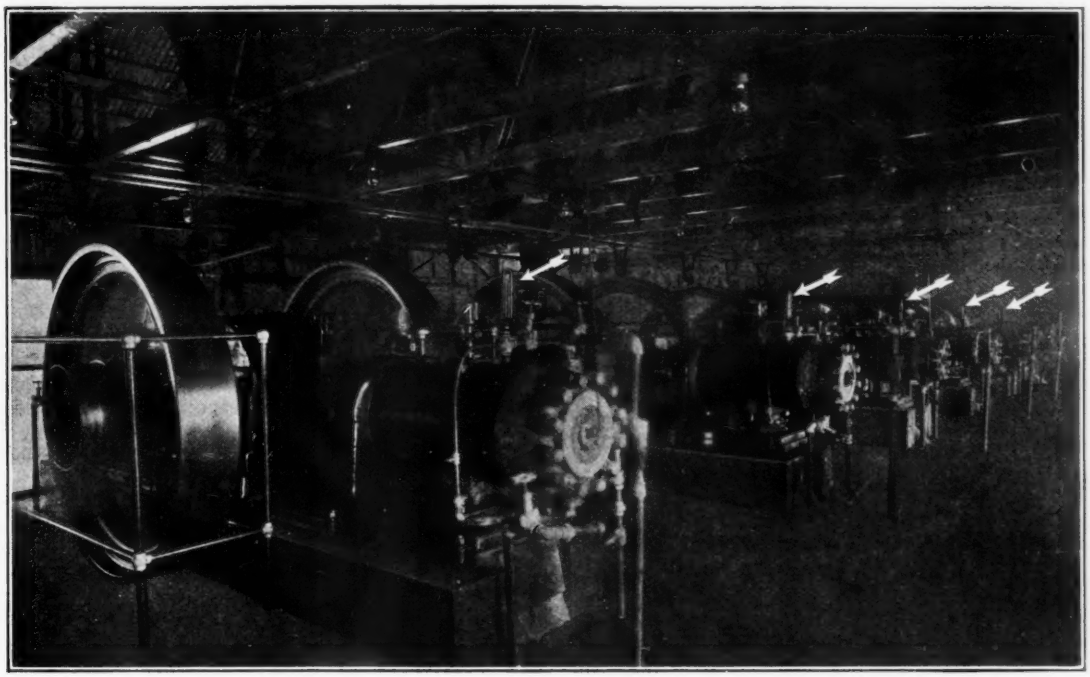
Therefore, even if the copper dish test could be standardized to give concordant results, the results would vary a great deal with the distillation range of the stock being tested. Also the results necessarily vary considerably, depending on the precise rate of evaporation, which determines the time to which the different fractions are exposed to oxidizing conditions.

The following table will show results obtained by the oxygen gum and the copper dish methods. The samples tested, with the exception of Sample 18, which was an experimental product, were purchased on the market.

Table II

Gum by the Oxygen Gum and Copper Dish Methods

Sample	Milligrams Gum/Sample	
	Oxygen Gum	Copper Dish
16	55, 62	42, 36
17	44, 44	64, 162
18	456, 525	520, 517
19	3, 4	13, 18
20	257, 246	58, 67, 144
	266, 269	113, 39, 91
21	40, 40	316, 372



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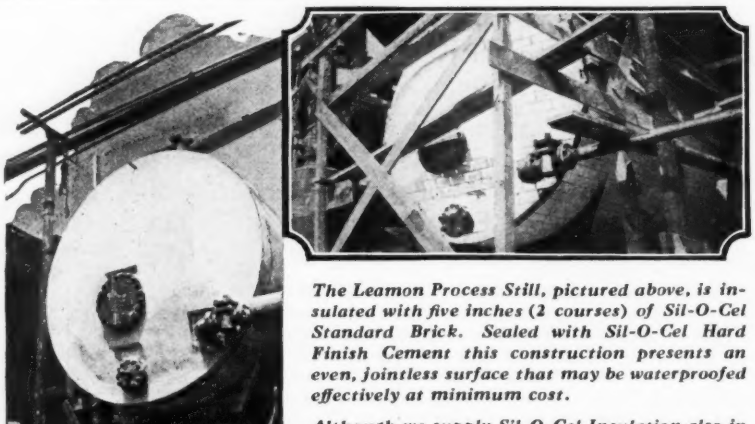

The Leamon Process Still, pictured above, is insulated with five inches (2 courses) of Sil-O-Cel Standard Brick. Sealed with Sil-O-Cel Hard Finish Cement this construction presents an even, jointless surface that may be waterproofed effectively at minimum cost.

Although we supply Sil-O-Cel Insulation also in the form of block and cements, as well as powder and C-3 aggregate, we strongly recommend the use of brick for the insulation of this kind of equipment.

Why Brick Insulation?

The easiest way to insulate steel surfaces against heat radiation losses is with Sil-O-Cel Insulating Brick. The most efficient insulated construction also is obtained by using insulating material in this form. And the cost is lowest, by far when you compare on the basis of heat savings and length of service from the insulation.

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There are no gaps in this insulated construction, where air could get through and circulate inside the insulation. Every bit of the insulation is in absolute contact with the steel—and every bit of the steel can be covered. Removing a portion of the insulation for attention to the steel underneath, entails no great amount of trouble. The insulating brick removed can be replaced with practically no loss.

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An important advantage of Sil-O-Cel Insulating Brick is their wide adaptability. The "fire brick size" insulating brick that you use in still-furnace walls and boiler settings, where direct temperatures may run as high as 1600° F., are the most efficient insulating material you can get for any heated equipment in refinery or gasoline plant. You stock only one grade, one shape, one size of insulating material when you standardize on Sil-O-Cel brick insulation over all hot steel surfaces.

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The table shows that the oxygen gum method gives more consistent results than the copper dish method, although the results are, in general, of the same order. For distinguishing between fuels, which are very stable or very unstable, the latter method gives results which are quite satisfactory, but for purposes of standardization it is not reliable.

F. Color and Gum

About the only excuse for a color specification for motor fuel is that color is often a measure of degree of refining. It is well known, however, that many of the present day antiknock fuels are of poor color but yet give quite satisfactory performance with respect to gum. Some of the fuels tested by the writers with colors below —17 Saybolt caused no gum deposition in the motor.

On the other hand, it is possible for a gasoline to be of good color but have an exceedingly high gum content. The following table will show the lack of correlation between gum and color of several samples of gasoline which had been in storage in dark bottles for two years:

Table III

Color and Gum Content

Sample	Actual Gum, mg./100cc. Steam Oven Test	Color —Saybolt
22	6	10
23	612	18
24	1.4	25
25	1240	—17

Gum and Engine Operation

A. Discussion

That gum in gasolines may cause serious trouble when used in an engine is generally recognized. Hall[2] made the following statement about gum in gasoline in his paper of 1915: "A spirit with such (gumming) tendency will eventually clog and stick up the valves of any engine in which it may be used."

One of the authors of this paper had a sad experience and saw several similar ones in connection with gummy gasolines. This happened about 1925, when several cars were run on a vapor phase gasoline which had been in storage since the war, or about seven years. No one suspected that this gasoline was appreciably different from any other, as it showed no precipitate, although it had that strong varnish-like odor, so commonly found in gum-containing fuels. After using about 10 gallons in a Winton car which at the time had already been driven over 80,000 miles and had the original valves and guides in the engine, and which, needless to say, were rather loose, considerable trouble was had from sticking of valves. It was very difficult to remove these valves since some of the gummy deposit had run down the valve stems. The deposit on the inlet valve head was about 1/16-inch thick and extremely sticky. A Mercer car, which was also using this same fuel, and which was

2 Loc. cit.

rather new, was more unfortunate in that it was almost impossible to remove the inlet valves; in fact, a crowbar was resorted to and, in one or two cases the valve stem guide came out with the valves. After several other similar experiences by other car owners, a copper dish test was made which showed about 1,000 milligrams of gum per 100 cubic centimeters. T. A. Boyd,[6] in a paper presented before the Society of Automotive Engineers, also refers to the "brown varnish-like resin" which separates from gasolines of high gum content and deposits on the fuel and intake systems of automobiles.

The present investigation was undertaken to determine to what extent a fuel should be free of gum in order to avoid repetitions of the above experiences. This requires first, the determination of whether the potential gum or the preformed gum in a gasoline causes the trouble in an engine, and second, how large the gum content may be, before engine operation is affected.

B. The Engine Test

For the major part of this investigation, a single cylinder air-cooled Delco model 850 was employed. The loading of the engine was obtained by the generator which is directly connected to the engine. The engine was operated usually at about 1250 revolutions per minute, the output of the generator being about 0.8 h.p. in most cases. The engine was cleaned before each test, making sure there was no carbon in the combustion chamber and that there was no deposit in the inlet passage.

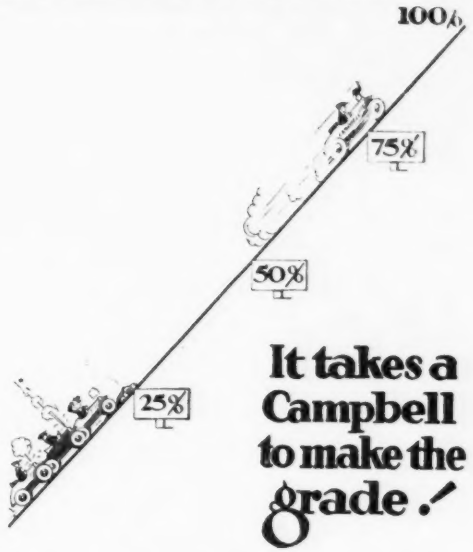
The valves were ground in before each test. The engine was run as outlined above until five gallons of the gasoline being tested had been consumed. It was found that this amount was sufficient to give indication of gumming with gasolines of moderate gum content. After a test the cylinder head and the inlet valve were removed and a photograph was taken of these two parts. The condition of the piston head was substantially the same after every test regardless of the fuel used, so that photographs of it were omitted, and for the same reason the carbon found here was not collected and weighed.

The carbon was, however, scraped from the cylinder head and weighed. The deposit on the under side of the inlet valve and in the inlet passage, when present, was removed and weighed and was taken as a criterion of the gumming tendency of the gasoline tested. This deposit was usually baked on and rather hard instead of the sticky, gummy deposit previously mentioned. However, in some cases, which will be referred to later, the deposit was of the gummy type.

C. Results

6 "Fuels from the Service Standpoint," T. A. Boyd, J. Soc. Aut. Engrs., Vol. 18; June, 1926; p. 643.

Billions of Bubbles



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Fifteen different tests were made on various kinds of gasoline and the results are shown in Table IV. Inspection of the results brings out very clearly the important fact that a gasoline may have a high potential gum content as shown by the copper dish and oxygen gum tests and yet give satisfactory performance in the engine. This is most strikingly illustrated by reference to Test No. 11, which was made on a freshly distilled vapor phase gasoline. This fuel, which gave 712 milligrams of gum by the copper dish test, but only 8 milligrams of preformed gum by the modified steam oven test, gave good performance in the engine with absolutely no deposit in the inlet passage. On the other hand, a gasoline which contained a somewhat larger amount of actual or preformed gum as shown by the steam oven test (17 milligrams) gave an appreciable deposit of gum in the engine. The explanation of this result probably lies in the fact that the gasoline is not in the manifold sufficiently long to permit oxidation and gum formation, and only gum which has been previously formed can be deposited on the hot surfaces.

For those tests made under approximately the same conditions, the amount of the deposit in the inlet passage has been plotted against the preformed gum content of the fuels as determined by the steam oven test. There is an evident relation between actual or preformed gum and the deposit in the inlet passage, although the deposit is usually smaller with those gasolines to which soluble gum has been added.

Therefore, the results of the steam oven test may in general be used to predict the amount of deposit which will form and the trouble that will ultimately result if the test is made at the time the gasoline is used. This relation is rather exact when it is considered that no means were available to accurately control engine operating conditions.

The results of a test made under no load conditions and at a somewhat longer engine speed indicate that the temperature of the inlet passage may have some effect on the actual amount as well as the character of the deposit that will form. Run No. 12, made under the above conditions, where the intake manifold wall temperature was 135 degrees F., gave only a small trace of gummy deposit. Run No. 13, on the same fuel at a higher load and an intake manifold wall temperature of 175 degrees F., showed a much greater deposit which was decidedly hard and brittle.

The main reason that the deposit of gum, which in some cases was excessive, did not cause any great trouble in sticking of valves was the fact that the construction of the engine, which was of the overhead valve type, caused the gum to run down and collect mostly on the under side of the valve head instead of on the valve stem, sometimes actually running into the combustion chamber. It seems logical to suppose for this reason that valve sticking would manifest itself sooner in the "ell" head motor. However, in the case of the overhead-valve engine the inlet valve may be held open by gum running over the valve seat.

The amount of deposit inside the cylinder head (see Table IV) does not seem to be in any way connected with the gum content of the fuel used. The variation in this deposit from run to run is probably due to differences in conditions.

Conclusions as to Permissible Limits for Gum

The literature contains only scanty references to the amount of gum which can be tolerated in a motor fuel. The Bureau of Mines in Technical Paper 214, describing the copper dish test, states that the fuel should not give more than .03 per cent gum by this test. This amounts to 22 milligrams per 100 cubic centimeters. It is also stated that aviation fuel should leave no "weighable residue."

In these specifications it should be pointed out that no distinction has been made between gum already contained in the fuel and gum which may form on storage. Obviously, a specification covering the gumming characeristics of gasoline should state

TABLE NO. IV. Summary of Gum Tests on Engine.

Run No.	Fuel Used	Gum by Steam Oven Test MG/ 100 c.c.	Gum by Oxygen Gum Test MG/ 25 c.c.	Gum by Copper Dish Test MG/ 100 c.c.	Weight of Deposit in Inlet Passage Grs.	Weight of Carbon Deposit on cylinder Head Grs.	R.P.M.	Load H.P.	Length of Test Hours	Remarks
1	Commercial Gasoline, No. 1.....	4	3	10	0.00	....	1260	0.45	16¼	No Gum Deposit, in Inlet passage or in cylinder.
2	Vapor Phase Gasoline, No. 2.....	7	6	65	0.00	....	1370	0.45	16¾	No gum deposit, in Inlet passage or in cylinder.
3	Vapor Phase Gasoline, (one year old), No. 3..?.....	120	520	665	3.99	3.29	1240	0.75	17¼	See photograph of cylinder head and valve after test; valve sticking.
4	Vapor Phase Gasoline, No. 4.....	22	380	188	0.94	1.57	1230	0.80	21¼	Some gum deposit inside of cylinder head.
5	Vapor Phase Gasoline, No. 5.....	17	360	237	0.41	3.38	1220	0.83	23¾	Some gum deposit inside of cylinder head.
6	Fuel No. 6—(50% of Fuel No. 4 and 50% of Fuel No. 1).....	11	....	110	0.17	1.93	1240	0.85	19	Slight trace of gum on Inlet valve.
7	Commercial Gasoline, No. 2.....	4	....	19	0.00	....	1310	1.10	16¾	No gum deposit, in Inlet passage or in cylinder.
8	Fuel No. 8-A—(Fuel No. 1 with Dissolved Gum).....	39	....	69	0.29	4.84	1230	0.93	17¾	Considerable gum deposit inside of cylinder head.
9	Fuel No. 8-B—(Fuel No. 1 with Dissolved Gum).....	12	....	46	0.12	3.09	1260	0.87	17¼	No gum deposit inside of cylinder head.
10	Vapor Phase Gasoline, No. 9.....	4	150	51	0.00	....	1280	0.98	15¾	No gum deposit, in Inlet passage or in cylinder.
11	Vapor Phase Gasoline, No. 11—(freshly distilled).....	8	850	712	0.00	1.29	1280	1.01	19¾	No gum deposit, in Inlet passage or in cylinder.
12	Fuel No. 8-C—(Fuel No. 1 with Dissolved Gum).....	18	....	32	Trace	1.17	960	0.00	28	Trace of Gummy Deposit on Inlet valve.
13	Same as Fuel No. 8-C.....	18	....	32	0.27	1.24	1220	0.98	19½	Some gum deposit inside of cylinder head
14	Vapor Phase Gasoline, No. 10....	12	170	453	0.09	3.04	1240	0.71	19	No gum deposit inside of cylinder head.
15	Fuel No. 12-A—(Fuel No. 1 with Dissolved Gum).....	26	....	81	0.20	2.88	1230	0.75	19½	Considerable gum deposit inside of cylinder head.

the permissible gum content of the gasoline at the time of use as an indication of its suitability for engine fuel, and it should also specify gum stability as an indication of the length of time it will remain free of gum in storage.

For these purposes it is apparent that no single test will suffice. We believe this paper describes satisfactory and reproducible tests for both gum content and gum stability in the steam oven test and the oxygen gum test, respectively.

In this work, an effort has been made to determine the maximum quantity of preformed gum which can be permitted in a fuel without seriously affecting engine operation.

The results are admittedly incomplete, but they seem to indicate that under most conditions, more than 10 milligrams of actual gum per 100 cubic centimeters at the time of use may produce a noticeable deposit in the inlet passage and on the valves. Inasmuch as the tests were made on an air cooled engine in which the intake manifold and valve temperatures are high, and in which gum deposition would be expected to be most serious, we believe that this limit for actual gum content is quite conservative. The work on the Delco engine has been more or less substantiated by actual car tests on the road.

A new four cylinder passenger car was operated for 1,608 miles, using 78 gallons of a gasoline which had shown a copper dish test of 351 milligrams of gum per 100 cubic centimeters and a steam oven test of only 6 milligrams per 100 cubic centimeters. It gave good performance and showed no signs of deposits on the inlet valves. Another similar test on the same fuel in a six cylinder passenger car showed the same results.

It is not so easy to fix the limit for potential gum or gum stability, involving as it does the time of storage at the refinery, the bulk station and in the distributor's and the consumer's tanks. Because of the great variation in the time of storage it is obvious that a satisfactory stability test must be rigid enough to insure that excessive amounts of gum will not be formed in any reasonable period of storage.

The oxygen-gum test has been developed for this purpose, although data giving direct comparisons between the predictions by this test and actual gum formation after storage are rather meager.

Some of the results which have been obtained are given in Table V. They seem to indicate that a gasoline which forms less than 10 milligrams of gum in the oxygen test (25 cubic centimeters) will not form enough gum on storage for at least a year, to impair its value.

New Patents

December 4, 1928

REFINING

Operation of Pressure Stills—John E. Bell, Brooklyn, N. Y., assignor to Sinclair Refining Co., Chicago, Ill. Filed July 26, 1924. No. 1,693,946.

Removal of Petrolatum from Oils—Charles Zweig, Wood River, Ill., assignor to Standard Oil Company, Whiting, Ind. Filed June 21, 1926. No. 1,694,090.

Art of Converting Hydrocarbon Oils—Oswald C. Brewster, Casper, Wyo., assignor to Standard Oil Company, Whiting, Ind. Filed June 20, 1925. No. 1,694,092.

Method of Distilling Petroleum—Henry H. Hewetson, Elizabeth, N. J., assignor to Standard Oil Development Company. Filed June 18, 1923. No. 1,694,259.

Process of Converting Hydrocarbons into Lower-Boiling Products—Frank A. Howard, Elizabeth, N. J., assignor to Standard Oil Development Co. Filed May 21, 1923. No. 1,694,262.

Preparing Hydrocarbon Products—Nathaniel E. Loomis, N. J., assignor to Standard Oil Development. Filed July 13, 1923. No. 1,694,272.

Process for Reclaiming Distillation Residues—Raymond E. Powell, Houston, Tex., assignor to Standard Oil Development Co. Filed Feb. 25, 1925. No. 1,694,280.

PRODUCTION

Well-Drilling Apparatus—Gerald R. Livergood, Houston, Tex. Filed Apr. 25, 1924. No. 1,693,609.

Oil and Gas Separator—David G. Lorraine, Los Angeles, Calif. Filed Nov. 6, 1922. No. 1,693,849.

Storage Tank for Liquids—Stuart Moser, Berkeley, Calif., assignor to Standard Oil Co. of Calif., San Francisco, Calif. Filed Dec. 11, 1926. No. 1,693,857.

Wheel for Drilling-Rig Structures—Richard R. Bloss, Columbus, Ohio, assignor to The International Derrick & Equipment Co., Columbus, O. Filed Apr. 25, 1925. No. 1,694,350.

NATURAL GAS

Process of Making Activated Carbon—Arthur Benning Ray, Bayside, Ernest Gardner Doying, New York, N. Y., assignors to Carbide and Carbon Chemicals Corp. Filed Oct. 22, 1925. No. 1,694,040.

Method of Separation and Liquefaction of Gases—William Spencer Bowen, Westfield, N. J. Filed Jan. 11, 1927. No. 1,694,308.

MISCELLANEOUS

Tank-Cleaning Device—Arthur B. Butterworth, Port Arthur, Tex. Filed Sept. 15, 1927. No. 1,693,885.

Breather Cover for Tanks—John S. Patten, Madison, N. J. Filed Sept. 2, 1926. No. 1,693,958.

Grease-Charging Apparatus—Herman J. Engbrecht, Chicago, Ill., assignor to Standard Oil Co., Chicago, Ill. Filed Dec. 2, 1925. No. 1,694,096.

November 27, 1928

REFINING

Apparatus for Refining Oils—John Primrose, New York, N. Y., asignor to Foster Wheeler Corp., New York, N. Y. Filed June 21, 1922. No. 1,693,156.

Revivification of Filtering Materials—Leslie W. Naylor, Florence, Colo., assignor to Continental Oil Company, Denver, Colo. Filed Aug. 31, 1922. No. 1,693,206.

Apparatus for Revivification of Filtering Materials—Leslie W. Naylor, Florence, Colo., assignor to Continental Oil Company, Denver, Colo. Filed Aug. 31, 1922. No. 1,693,207.

PRODUCTION

Method of Perforating Casings—Richard C. Woodward, Los Angeles, Calif., assignor to McEvoy Wireless Well Strainer Corp., Los Angeles, Calif. Filed Sept. 28, 1925. No. 1,693,011.

Casing-Drilling Machine—Maynard N. Young Healdsburg, and Donald C. Patterson, Geyserville, Calif. Filed Oct. 16, 1926. No. 1,693,013.

Rotary Drill—Herbert D. Bartholomae and William A. Bartholomae, Jr., Los Angeles, Calif. Filed May 11, 1926. No. 1,693,017.

Blow-Out Device for Oil Wells—Burt S. Minor, San Pedro, Calif., assignor to Regan Forge & Engineering Co., San Pedro, Calif. Filed June 9, 1926. No. 1,693,039.

Oil-Well Pump—James P. Worthington, Ponca City, Okla., assignor to Lory J. Mildren, Ponca City, Okla. Filed Feb. 23, 1926. No. 1,693,101.

Oil-Well Pump—James P. Worthington, Ponca City, Okla., assignor to Lory J. Mildren, Ponca City, Okla. Filed Feb. 23, 1926. No. 1,693,102.

Derrick—Thomas F. Campbell, Denver, Colo., assignor to Richard S. Shannon, Denver, Colo. Filed June 28, 1926. No. 1,693,107.

NATURAL GAS

Separation of Gases from Gaseous Mixtures—Montague H. Roberts, Jersey City, N. J., assignor to Air Reduction Co., Inc. Filed Jan. 25, 1919. No. 1,693,052.

MISCELLANEOUS

Process of Forestalling Leakage in Concrete Reservoirs—Eugene R. Oden, Lankershim, Calif. Filed Nov. 11, 1926. No. 1,693,094.

Standard Is Using Radio As Advertising Medium

CHICAGO, Dec. 15.—Standard Oil Co. of Indiana has gone in for radio advertising. The campaign started Nov. 25 and will continue over a chain of nine broadcasting stations in its marketing territory for the rest of the winter. Standard's time on the air is Sunday from 6 to 7 p.m. and Thursday from 9:30 to 10 p.m.

The programs differ widely. The Sunday hour is a program by the Chicago Symphony orchestra. The Thursday program is popular music. Very little advertising accompanies the symphony concert; nothing except that the announcer introduces the hour with the statement that Standard Oil Co., offers the public the best in music as in petroleum products.

The symphony concert will be on the air every Sunday until the orchestra disbands in the spring. The popular program has no such limitations. It is called the Iso-Vis hour. The programs may be heard over WGN Chicago, WTMJ Milwaukee, KSG St. Louis, WDAF Kansas City, WOW Omaha, WSTP St. Paul, WEBS Duluth, WOH Des Moines and WOC Davenport.

During the past month there have been 47 arrivals, with 68 passengers, and 49 departures with 76 passengers, from the Tulsa municipal airport. These do not include the regularly scheduled flights, such as the Tulsa-Oklahoma City line maintained by Braniff Air Lines Inc., and the air mail planes. One hundred and thirty-one passengers were carried on over-the-city flights and on special trips.

Table V

Ability of the Oxygen Gum Test to Predict Gum Stability

Sample	Oxygen Gum Test Mg. per 25 cc.	Time of Storage	Actual Gum Formed Mg. per 100 cc.
26	410	21 mos.	168 (gum separated)
23	465	21 mos.	612
22	4.6	21 mos.	6
24	0	21 mos.	1.4
27	252, 246	8 mos.	48, 36
28	3, 4	8 mos.	8, 10
29	2, 2	8 mos	2, 2

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Back of this advertisement and the Pure Oil salesmen, back of the products which they sell, is a vast army of men—ready to serve you. Hundreds are working in Pure Oil's producing fields, others are operating its modern refineries. Some direct the movements of Pure Oil tank cars while some flash orders over private telegraph lines. *Every* operation from wells to you is ably controlled by The Pure Oil Company—your assurance of uniform quality . . . delivery on the dot!

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Mr. Jobber: the organization back of this advertisement can serve you well. When you need any petroleum product phone, write or wire the nearest Sales Office

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Atlanta, Ga.
Beaumont, Tex.
Pensacola, Fla.

Visiting Around the Refineries

By Paul Truesdell

National Petroleum News

WE CAN thank a Britisher, Dr. A. E. Dunstan, for doing a service to our refiners by bringing again into the spotlight the troubled question of safe sulfur limit in motor gasoline. As told in last week's issue,* Dr. Dunstan touched on it during an address on refining of Persian crude oil, at the A. P. I. meeting in Chicago.

He stated that there is no sulfur limit prescribed in British motor fuel specifications and that the problem of corrosion of automobile engine parts by sulfur in gasoline is unknown in the British Isles.

In this country, of course, the Federal Specifications Board forbids more than 0.10 per cent of sulfur in motor fuel bought for government use. While this specification truly applies only to products bought for the government, it has become an accepted trade standard.

The technologists of the oil and motor industries are divided as to whether the sulfur limit can be safely raised.

It would seem that now is a fine time to start work on this problem that will establish once for all whether such a limitation is necessary to safeguard the billions of dollars invested in motor vehicles.

If it is, the sulfur limitation should unquestionably be retained. General Motors chemists, at least, think to raise the limit would be dangerous. Many oil chemists agree with them. There are also many oil chemists and probably some in the automobile industry who disagree.

If the refiners are being forced to spend some $50,000,000 a year to treat gasoline to a fantastic specification, they should be relieved of that burden, especially as the burden will grow rapidly as more and more of the sour crudes from West Texas and elsewhere are charged to crude stills and cracking units.

Why could not the joint research program being carried out by the American Automobile Chamber of Commerce, the Society of Automotive Engineers and the American Petroleum Institute at the Bureau of Standards, be stretched to cover investigation of this question also?

If it could not, why not a special joint committee to investigate it?

We ought to get the right answer to this question as promptly as possible.

* * *

THE refinery operation described by Dr. Walter F. Rittman of Carnegie Tech at the recent International Conference on Bituminous Coal,* has aroused a great deal of interest among refiners. It was much discussed in private conversations at the American Petroleum Institute meeting. Dr. Rittman was the target for many questions, none of them apparently skeptical, as to just how the process is worked, with the query in the back of questioners' heads: "Would that fit into my refinery operations?"

It will be remembered by those who read Dr. Rittman's paper that the process consists in running down a heavy cracked residue of about 5 to 6 A. P. I. gravity and containing a considerable amount of lime, to make a cracking stock overhead and real coal as an end product.

The process is actually operating at the plant of the Skelly Oil Co. at Eldorado, Kans., and the residue being run is that from Jenkins cracking stills. This residue had been collecting in storage for several years until it had filled so much tankage that some way had to be found to handle it.

The first method naturally suggesting itself was to coke it and take a gas oil cut overhead. Coking is a bad enough operation at best. Installation of equipment to work off the stored residue at a reasonable rated speed would cost a large sum. Besides, the lime in the residue would make the destruction of still bottoms a rapid matter.

The mild distilling system, built by converting a couple of abandoned cracking stills, cost very little. The residue is converted into about 70 per cent charging stock which is cracked to give a high gasoline yield and about 30 per cent of coal and fixed gas. By holding down the temperature, coal is formed instead of coke and this coal, kept in a fluid state, is continuously pumped out of the bottom of the flash tank, to solidify into coal when exposed to the air. It can be pumped right into gondola cars if desired.

It is stated that about 12 per cent more of overhead distillate could be derived by running on down to coke but this additional stock would be so deficient in hydrogen that it would yield very little gasoline on cracking, and capital, maintenance and labor charges would be much higher.

* * *

TALK about condensing problems. Dr. Dunstan says the atmospheric temperature in Abadan, Persia, where the big Anglo-Persian refinery is located, reaches 130 degrees F. in the shade at certain seasons. The cooling water which is drawn from the Tigris and Euphrates rivers, which join at that point, averages about 95 degrees F., the comparative coolness of the water being due to the fact that the streams are fed with snow water from the mountains.

* * *

SIMPLICITY in gasoline specifications seems to be the goal toward which the industry and the consumer are tending. I learned at the A. P. I. meeting that a large amount of gasoline is sold by some California refiners right along on the sole specification of a certain percentage over at 212 degrees F. Initial, 10, 20, 50 per cent points, end point, gravity and color, all are ignored.

And along comes Dr. Dunstan and tells us the controlling and almost the only requirement for motor fuel for sale in England is that a designated percentage vaporize at 100 degrees C. or 212 degrees F.

This method of selling gasoline in California is not new but it was new to me and it seems likely that it will increase in popularity.

Gravity and color have been pretty much thrown into the discard; volatility has been pretty well figured out; the problem of determining and stating anti-knock value is on the way to solution by a committee.

Sulfur and gum seem the most serious remaining problems in connection with motor fuel.

*National Petroleum News, Dec. 12 issue, page 31.

*National Petroleum News, Nov. 28 issue, page 33.

The Mid-Continent Skyline

By Lawrence E. Smith

Tulsa, Okla.

LOOKING back upon the American Petroleum institute meeting in Chicago, we believe it is in order to say that considerable progress was made in the direction of stabilization, rationalization, or whatever you please to call it. There was nothing of a formal nature before the directors of the institute on this question. We are informed that legislation was not discussed. The directors took their stand a year ago by endorsing the principle of state legislation to conserve gas and there was nothing to add.

It was in the conferences held privately throughout the meeting that the vexatious question of restraint in producing oil was discussed. Curiously enough, events in Oklahoma, Kansas and Texas, while the institute was in session were of such nature as to dramatize the situation. The new strike at Oklahoma City, opening a vast region to exploration; the discovery in Sedgwick county, Kans. and the bringing into production of the world's deepest well in Texas, all "breaking" about the same time, showed in the most forcible manner that the occasion for restraint is not past.

It is not too much to hope that the whole problem can be handled within the industry. There is a large group, numbering many constructive thinkers, that believes resort to legislation is necessary. It is difficult to determine just how sentiment is divided, but there doubtless is an equally large group that sees the problem as wholly an inter-industry one—believes that the machinery of production control can be invented and made to function voluntarily. No question at all that much progress has been made. The only question is whether there are obstacles of such magnitude that resort to legislation will be necessary.

It is evident that the institute intends to address itself to this problem far more vigorously than it has in the past. The election of E. B. Reeser, of the Barnsdall, to be president indicates this. Mr. Reeser is a great hand to keep right on ringing doorbells when he becomes convinced of the wisdom of a course. He is dynamic and he is persistent. While no apparent results were had from his work last summer in trying to get some restraint established on South American fields, the men he talked to off and on for several weeks must have been impressed, for several of them were on the committee that put his name in nomination for the A. P. I. presidency. We shall watch with interest the course the institute pursues this year.

* * *

Those who have known him long cheered when William R. Boyd, Jr. was made executive vice-president of the Institute. Bill has been assistant secretary and counsel ever since the Institute was founded. The first time this writer encountered the genial William was back in 1917. Mr. Boyd was practicing law in Kansas City and had become interested in a now-forgotten organization called the League to Enforce Peace. William Howard Taft was its head and Bill was southwest secretary. We rode in parades with Messrs. Boyd and Taft for two or three days and the enthusiasm for the cause was great. A little later this country entered the war and the league retired from business. Bill Boyd had been places and seen things and has a pretty good idea of what it is all about. He will fill the new place with grace and distinction.

Over at Oklahoma City, the Indian Territory Illuminating Oil Co. will require expert opinion on shooting wells and perhaps, Lord forbid, on extinguishing oil and gas fires. In C. O. Rison they have such a man. For years he was with the U. S. Bureau of Mines and gained a reputation for being a fire fighter. He has been in an executive position with the I.T.I.O. for several years

* * *

We have spoken of this matter before and we trust that it will not be necessary again. Henceforth, any operator who fails to put a sign on his well in Oklahoma, telling its number and geographical location as required by the state law, will have his tobacco taken away from him for a week.

* * *

One of our Mid-Continent superintendents remarked when he got back from the Chicago meeting that he felt like he had been "drilled by."

* * *

R. W. Curran, manager of the Bartlesville Gas & Electric Co., has resigned to become manager of Arkansas distribution for the Arkansas Natural Gas Corp. Both are Cities Service companies. Mr. Curran is succeeded at Bartlesville by A. F. Potter, who has been managing the Carthage, Mo., gas company and Harry Siebenthaler, who looked after the gas company at Dewey, Okla., goes to Carthage.

* * *

D. A. Garland, father of R. A. Garland, joint discoverer with the Independent Oil & Gas Co. of Wilcox production in the Seminole pool, died in Oklahoma City last week. He was 76 years old.

* * *

S. J. Smith, a pioneer oil producer, of Sapulpa, died Dec. 2. He was prominent in politics, having served two terms as state senator and two as mayor of Sapulpa.

* * *

Gloat item, by the editorial writer of the Wichita Eagle:

"Wichita is alive today with a vitality and mental animation certain to result in a forward surge. It is stepping along to that martial music which incites the will to conquer. Every added oil well is a new order for the onset and the song of the siren as it greets the ears of listening Wichita will be a triumphant paean of victory."

* * *

Dr. E. A. Eckhart, physicist, has resigned from the research staff of the Marland Oil Co. and joined that of the Gulf Oil Corp. He is moving

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from Ponca City to Pittsburgh. Dr. Eckhart has been with the Marland for four years, prior to which he was with the U. S. Bureau of Standards.

* * *

Oklahoma City Notes: The Indian Territory Illuminating Oil Co. and the Foster Petroleum Co. published a page ad in an Oklahoma City newspaper, styled merely, "Our contribution to Oklahoma City's Prosperity." Under the caption was a picture of the flowing well they had just drilled in, south of the city.

The crew that worked on the well have gotten, or are to get, new suits of clothes all around, gifts of Oklahoma City merchants. And Charles Carter, land man for the I. T. I. O. at Oklahoma City, received a large basket of posies from an Oklahoma City florist.

* * *

Many a man in this industry, supply and field, is disappointed that there will be no Colorado Springs meeting of the Institute in 1929. It was decided last week to hold the meeting in Tulsa in May. And just as we had decided to take up golf, too.

* * *

No vast deal of interest is manifest just now in a tariff on oil. Representative E. B. Howard, of Tulsa is leading in the move to fix a one dollar per barrel duty and the man who defeated him in the late election. Charles O'Connor, pronounced himself in favor of such a tariff before the votes were cast. It is expected, however, that the people who favor such a move will make themselves heard during this session of Congress.

* * *

T. R. Cowell, one time secretary and later vice-president of the Transcontinental Oil Co., announces that he is now located at 111 Broadway, New York. He moved his offices from Pittsburgh, where he was long associated with the Benedum-Trees interests.

* * *

The day of the Army-Leland Stanford University football game found J. E. (Brick) Elliott, former Stanford player, in Kansas City. Not trusting the radio to give him a clear reception of the news, he arranged with the telegraph company to send him the play-by-play account of the game. Newspaper photographers broke in and found the head of the Elliott Core Drill Co. deeply engrossed in the reports of the gridiron battle.

* * *

The Mere Oil Co., owning a small refinery at Thermopolis, Wyo., is moving the plant to the Osage fie'd in Weston county of that state. The refinery was built to operate on the heavy oil produced in the Warm Springs field near Thermopolis, but has never done well. W. D. Channel one time in the employ of the Standard Oil Co. of Indiana and later an independent refiner in Kansas, is to be in charge of the plant at its new location.

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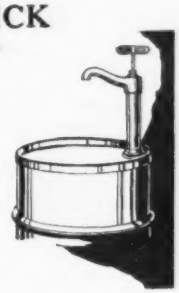

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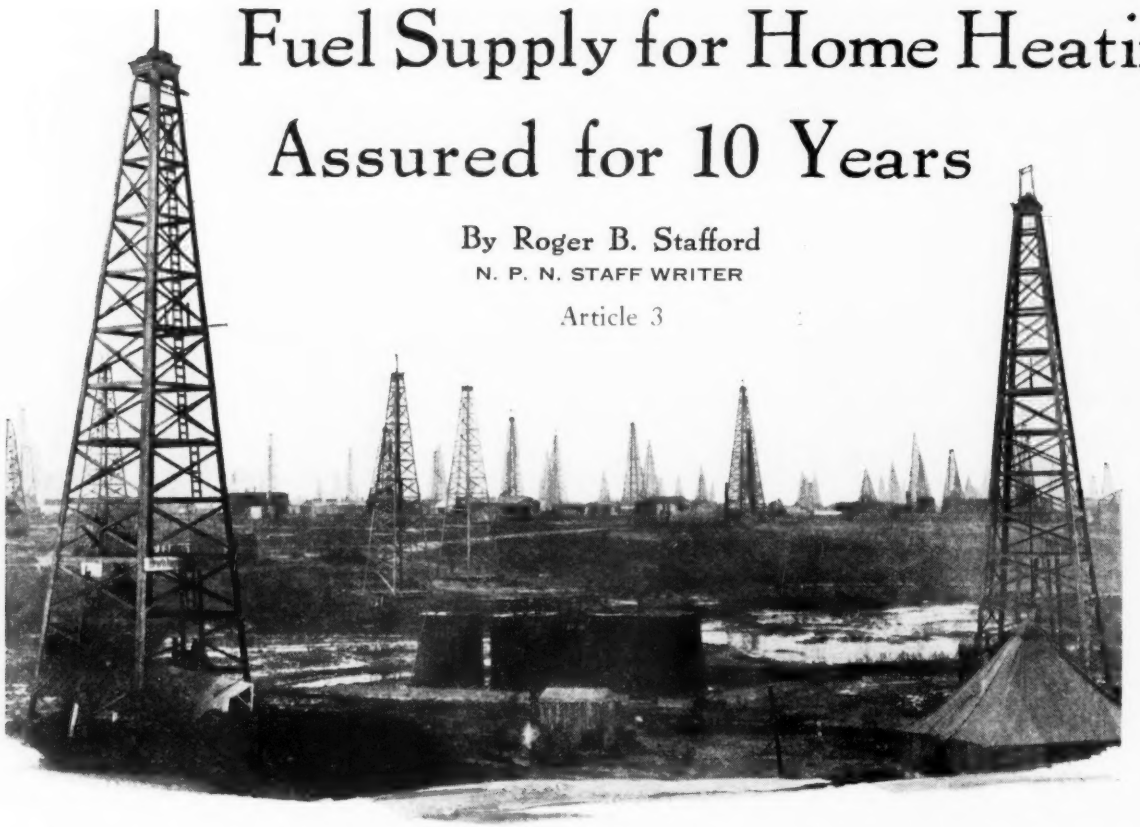
Fuel Supply for Home Heating Assured for 10 Years

By Roger B. Stafford
N. P. N. STAFF WRITER

Article 3



Proven oil fields of the United States, of which this is one, have sufficient reserves, authorities declare, to supply the needs of the developing oil heating market, as well as to care for the normal growth of the automotive and other present demands

CLEVELAND, Dec. 15

ENOUGH petroleum is available in present proven fields to meet the demand of both automobiles, and domestic and commercial heating plants in the next 10 years, at reasonable prices, besides meeting the normal growth of all other usages of oil.

This assertion is the essence of an estimate made by one of the leaders of our industry in the United States but who does not wish to be publicly quoted. The estimate was the response to a question as to whether the future supply of petroleum would warrant our industry backing the development of the automatic domestic heater.

Not only is the supply from present proven fields adequate but developments in the manufacture of petroleum probably in the next few years will bring a greater economic realization from petroleum than is obtained at present.

A process has already been carried successfully into the laboratory stage for the conversion of our heavy fuel oils into a gas or diesel oil that is suitable for domestic and commercial oil heaters as well as for charging stock for gasoline cracking plants. This process when perfected commercially, will throw into the domestic heating field or into the gasoline field a great supply of oil which cannot now be used for the higher economic purposes. It will provide an outlet for the heavy oils and unrefinable crudes of today, which have been piling up in tanks and reservoirs for a long time.

It is the intention of the developing company, it is said, to license the process to any refiner once it is perfected in the commercial stage. Its backers rank high in our industry but they are not yet ready to reveal their identity.

What may be expected in the way of crude oil in the next 10 years is summarized by Paul Wagner of NATIONAL PETROLEUM NEWS staff in the accompanying box.

There is no need for the oil marketer to fear that he should not get behind heating with oil because the supply of oil will be inadequate in the immediate future. Of course, oil for heating purposes as a raw material for the manufacture of gasoline, must compete with gasoline but engineers and scientists in this chemical and mechanical age will surely be able to cope with the ever increasing demand for fuel for both the internal combustion engine and the domestic and commercial heating plant.

Several important reserves have not been considered in this reckoning of the future oil supply. These other reserves include the oil shales and bituminous coals, which, when prices warrant, will prove to be abundant sources of supply. It is now believed that the oils from some shales can be marketed profitably at a price level not far above the present price level of petroleum oils. But we probably will not have to resort to the shales and coals for a good many years.

The public is rapidly outgrowing any fear that the supply of oil may be exhausted soon. Such fears were widely held seven or eight years ago but areas then believed to be unproductive of petroleum have since divulged the largest supply in the history of this industry.

A survey made last year by the Philadelphia *Public Ledger* of the oil burner market in metropolitan Philadelphia failed to uncover one expression of fear of an oil shortage as a reason for not buying an oil burner. Six main reasons given for not buying burners were: Lack of knowledge about heating with oil; initial cost of burner; cost of oil; waiting for improvements in burners; waiting for reduction in price of burner, and a doubt about operating burner.

No person mentioned the supply of oil in resisting a sale, just as no person tells an automobile salesman, "I'd buy a car if I knew there would be gasoline 10 years from now."

The consumer prospects were more optimistic than some oil industry members. The head of the fuel oil department of one of the major companies was gloomy about the future of oil heating. He predicted that oil for burning will be supplanted by

coal even for domestic use. He said his company had lost its largest industrial fuel oil contract when a power company installed pulverized coal burners and that domestic automatic stokers might soon bring about the return of coal for domestic heating.

It is the opinion of this writer that the men who are doubtful about the future of heating with oil, particularly the domestic and smaller automatic commercial heating jobs, have failed to consider the American ideal of comfort and convenience.

The American wishes to enjoy the comforts and conveniences of automatic heating but will not buy a burner if his mind is impregnated with the fear that the supply of oil will be exhausted next year. He will buy when he realizes he can be assured a fair priced supply of oil for a few years ahead. The scientists of our industry and our government have given us ample assurance that we have ahead a supply ample for many years for use in automobiles and heating plants.

This country last year produced 901,129,000 barrels of crude oil which volume was 26,908,000 barrels more than was needed to meet the domestic demand for petroleum for all purposes. These figures are taken from the U. S. Bureau of Mines reports on crude oil supply and demand.

East of California stocks of fuel and gas oil increased approximately 9,000,000 barrels last year, or 75 per cent as large a volume as was required to keep burning the 221,500 domestic oil burners that were in operation at the beginning of last year.

Of course, not all of the accumulation of fuel oil was suitable for domestic heating equipment but with conversion of present unsuitable oils into suitable oils possible within a few years, the available supply of home heating oils will be greatly enlarged. These lighter oils will always command a relatively better price than the heavy fuel oils which now are selling at bankrupt prices because of the steady accumulation of stocks.

It is reasonable to assume that when conversion is possible they will be transformed into more valuable products, which means that the supply of home heating oils will be increased.

Fear Grows of Over-Supply of Oil Rather Than a Shortage

By Paul Wagner *N. P. N. Staff Writer*

REGULAR contacts with men in the petroleum industry who are best fitted to judge future supplies impress the writer with absolute confidence that all consumptive demand for the next 10 years will be easily met. Concern is growing among these men, and this cannot be without its significance, about the possibility of an over-supply.

Adequate basis is found for the estimate that there is in sight a domestic crude oil reserve of 10 billion barrels, recoverable in the next decade. This estimate takes no account of fresh discoveries, establishing new reserve areas, or of "back-log" settled production that must, in its very nature, come above ground in longer periods of time.

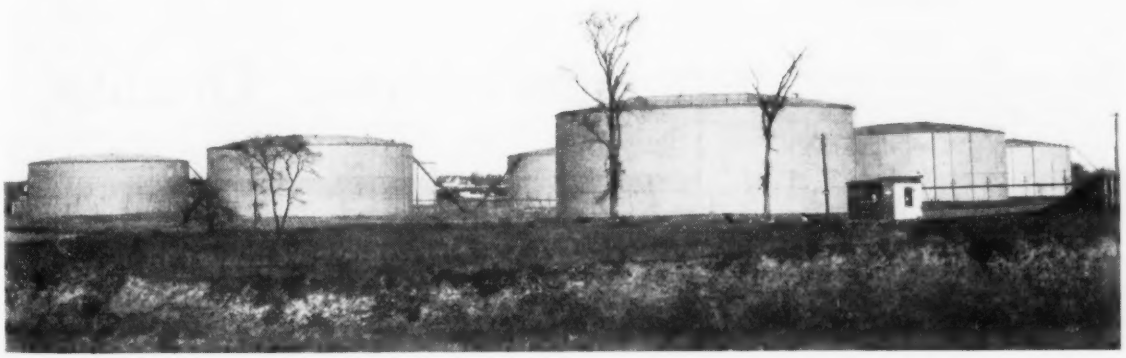
If the next five years may be considered comparable with the last similar period in the establishment of new reserves then the quantity of petroleum available over the next decade will be correspondingly increased.

Three major reserves previously credited with no oil possibilities were established, and to some extent exploited, in the period of 1924-1928, inclusive. These were the Permian salt basin of west Texas and southeastern New Mexico, the deep pay horizons of California and the Greater Seminole district of Oklahoma.

In each region, known reserves present conclusive evidence to the seasoned oil operator and the technologist of at least equal quantities of oil awaiting discovery. If the writer errs in this appraisal then it is on the side of conservatism. It is of record that no industrial agency, or technologist, has been found brave enough in the past to set up reserve figures for the entire country that even approached subsequently established recoverable quantities.

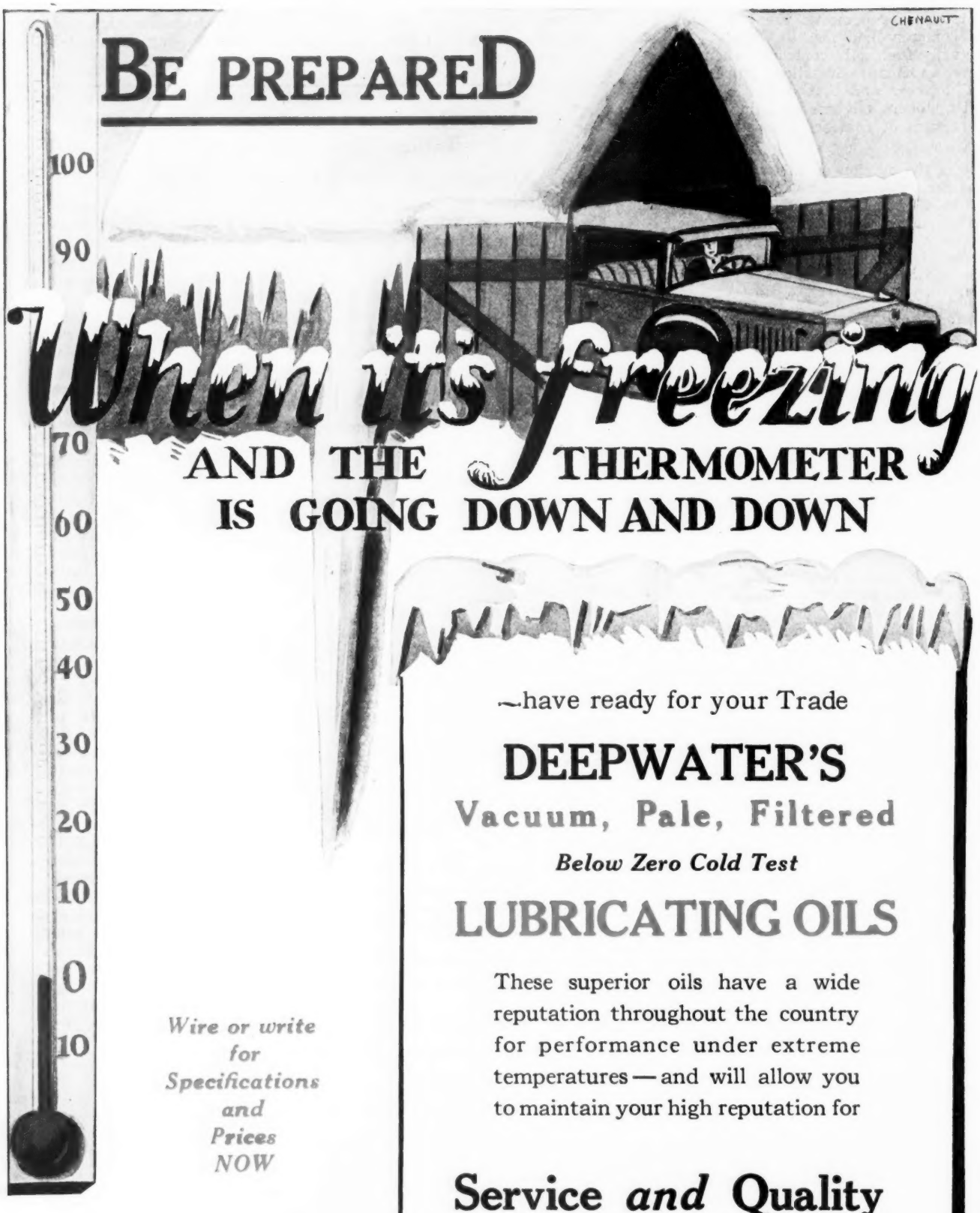
South America, on which our industry will draw largely in years to come, may be described as barely on the threshold of petroleum development. Its established reserve of between 500,000,000 and 1,000,000,000 barrels is about as significant there as the known future of the American industry was when the Appalachian district had reached its peak years ago.

Enough oil is indicated to be within reach of markets in Venezuela and Colombia to bring about exploitation, as needed, any time in the next 10 years. Established reserves mentioned take account only of oil in actually producing fields, mainly in Venezuela and Colombia but including Peru and The Argentine. Indicated areas of future production, safely described as reserves because of their regional position and their broadly recognized structural conditions in relation to sedimentation, give further assurance of crude oil supplies when needed.



A considerable portion of the oil stored in these tanks will be used to heat America's homes

BE PREPARED



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Government Gasoline and Crude Oil Report Again Carries Warnings

By Roger B. Stafford
N. P. N. STAFF WRITER

CLEVELAND, Dec. 15

THE U. S. Bureau of Mines statistics on the operations of our industry in October contain two important warning signals.

One is the addition to stocks of crude oil after four months of withdrawals and the other the addition to stocks of gasoline. This is the second consecutive report that contains overproduction danger signs.

It is not unusual to add to gasoline supplies in October but the accumulation this year came after there had been a relatively small withdrawal from stocks of finished gasoline in September.

The production of crude oil was the largest in history. Daily average recovery was approximately 23,000 barrels more than the previous record recovery, that of September. The increase in October was due more than half to the St. Louis pool in Oklahoma and the remainder to gains in Gulf Coastal Texas and the eastern fields.

Refiners curtailed their runs of all oils and natural gasoline to stills 65,000 barrels daily average, but the domestic output of gasoline fell only 11,000 barrels.

The accumulation of gasoline was only 48,000 barrels but demand is tapering off and stocks, expressed in terms of days' supply, are rising at a faster rate than stocks as expressed in barrels. The Oct. 31, 1928, stocks formed a 23.7-day supply at the October rate of demand. Those of Sept. 30 formed only a 22.9-day supply. However, the situation was better than a year before. Stocks Oct. 31, 1927, represented 31.1 days' supply at the rate of demand in October, 1927.

A hopeful sign was the fact that refiners are evidently striving to keep their rate of manufacture more in line with the demands of the market. No refining district in October had charges to stills near the peak of crude runs for that district.

Like crude oil and gasoline stocks, the above-ground stocks of all petroleum rose in October, the gain being 226,000 barrels. In terms of days' supply the 607,399,000 barrels of stocks of all oils Oct. 31 was 207.2 days' supply at the October rate of demand. Stocks on Sept. 30 formed 201.8 days' supply at the September rate of demand.

Figured on demand in 1928 to the end of October, the Oct. 31 stocks formed 221.5 days' supply or 2.2 days' supply less than the 578,663,000 barrels of all oils on hand Oct. 31, 1927, formed at the rate of demand in the first 10 months of 1927.

The gain in crude oil stocks in October was 1,713,000 barrels but there were drafts of 1,453,000 barrels in stocks of refined products in spite of the upturn in gasoline stocks, and a decrease of 34,000 barrels in natural gasoline supplies. This made a net increase of all oils of 226,000 barrels.

One remarkable feature of the October report is that in that month no crude oil was moved from California through the Panama canal to an Atlantic or Gulf coast refinery. This was the first time no such movement had taken place since July, 1922, six and a quarter years ago. This is probably due to the gradual diminution of stocks of refinable crude oil in California. These stocks fell 5,006,000 barrels to 16,670,000 barrels in the year ended Oct. 31, 1928.

The October report, prepared under the supervision of G. R. Hopkins, embodied the operating statistics of 332 refineries with a rated daily crude capacity of 3,147,000 barrels. These plants were operated at 82 per cent of their recorded capacity.

Crude Stocks as Month Ends

(Thousands of Barrels)

1927	East of Calif.	†In Calif.	Total U. S.
January	278,972	118,988	397,673
February	285,458	117,410	402,868
March	290,110	117,454	407,564
April	297,895	117,843	415,738
May	307,016	117,432	424,448
June	315,702	117,414	433,116
July	324,930	116,996	441,926
August	333,673	115,227	448,900
September	339,741	114,981	454,722
October	345,357	113,467	458,824
November	348,885	113,746	462,631
December	351,646	111,855	463,501
1928			
January	358,892	114,820	473,712
February	362,963	114,907	477,870
March	368,744	114,117	482,861
April	371,579	113,053	484,632
May	371,551	113,111	484,662
June	370,751	113,431	484,182
July	369,243	113,878	483,121
August	368,653	113,367	482,020
September	366,652	113,433	480,085
October	368,031	113,767	481,798

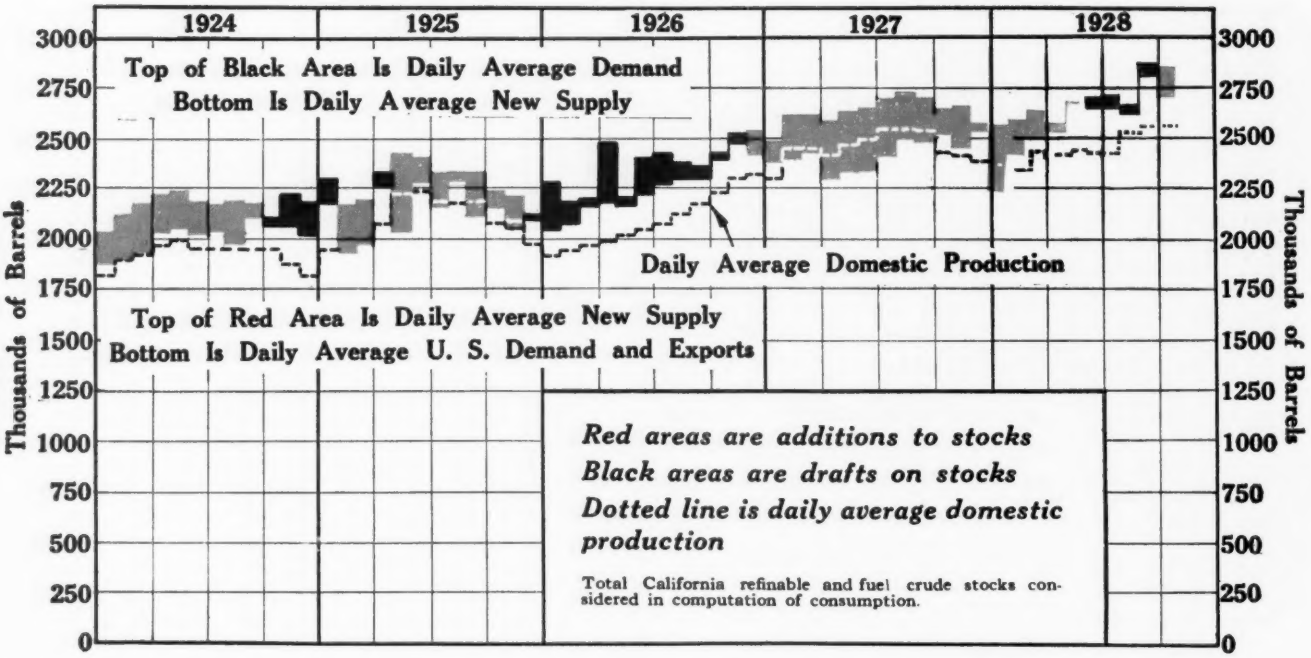
†Includes heavy fuels.

Petroleum Supply and Demand — Barrels

	Oct. 1928	Sept. 1928	Aug. 1928	Oct. 1927	Jan.-Oct. 1928	Jan.-Oct. 1927
Domestic crude production: Light	71,876,000	69,081,000	70,090,000	68,277,000	667,028,000	656,483,000
Heavy	7,786,000	7,323,000	7,739,000	9,257,000	77,581,000	95,202,000
Imports of crude oil	6,703,000	7,140,000	6,141,000	4,633,000	65,868,000	46,834,000
Imports of refined oil	771,000	598,000	1,007,000	1,042,000	10,066,000	11,438,000
Natural gasoline produced	3,695,000	3,452,000	3,421,000	3,419,000	34,309,000	31,831,000
Benzol used in blending	245,000	231,000	233,000	217,000	2,316,000	2,145,000
Total new supply of all oils	91,076,000	87,825,000	88,631,000	86,845,000	857,168,000	843,933,000
Total stocks end of preceding month	607,173,000	609,594,000	613,163,000	573,379,000	607,399,000	578,663,000
Total supply of all oils	698,249,000	697,419,000	700,683,000	660,224,000	1,464,557,000	1,422,696,000
Exports of crude oil	2,016,000	1,505,000	1,883,000	1,539,000	15,753,000	12,846,000
Exports of refined oil	10,270,000	11,285,000	10,816,000	11,554,000	115,715,000	105,300,000
Domestic demand, crude and refined	78,564,000	77,456,000	78,390,000	70,311,000	704,890,000	668,260,000
Total demand	90,850,000	90,246,000	91,089,000	83,404,000	836,358,000	786,406,000
Total stocks of all oils end of month	607,399,000	607,173,000	609,594,000	578,663,000	607,399,000	578,663,000
Days' supply	207.2	201.8	207.4	215.1	221.5	223.7
Increase in stocks	226,000	*2,421,000	*2,458,000	4,048,000	*226,000	*3,441,000
Daily average new supply	2,938,000	2,928,000	2,859,000	2,801,000	2,810,000	2,776,000
Daily average demand	2,931,000	3,008,000	2,938,000	2,690,000	2,742,000	2,587,000
Daily average excess of supply	7,000	†80,000	†79,000	111,000	68,000	189,000
Crude stocks east of Calif.: Light	319,279,000	317,164,000	317,438,000	297,336,000	319,279,000	297,336,000
Heavy	48,752,000	49,488,000	51,215,000	48,528,000	48,752,000	48,528,000
In California: Light	16,670,000	16,870,000	18,310,000	21,676,000	16,670,000	21,676,000
Heavy	97,097,000	96,563,000	95,057,000	92,233,000	97,097,000	92,233,000
Total stocks of crude	481,798,000	480,085,000	482,020,000	459,773,000	481,798,000	459,773,000
Total stocks of refined	125,199,000	126,652,000	127,160,000	118,109,000	125,199,000	118,109,000
Total stocks of natural gasoline	402,000	436,000	414,000	781,000	402,000	781,000

*Decrease †Deficiency

Crude Oil Production and Demand



October domestic production	2,569,000 Bbls. daily av.	Stock at refineries east of California Oct. 31, 1928	39,830,000 Bbls.
October imports	216,200 Bbls. daily av.	Stocks at Tank farms and in pipe lines east of California	327,994,000 Bbls.
Total new supply	2,785,200 Bbls. daily av.	Stocks of foreign crude oil not at refineries	207,000 Bbls.
October demand east of California	2,049,700 Bbls. daily av.	Stocks of California crude	113,761,000 Bbls.
October demand in California	616,000 Bbls. daily av.		
October exports	65,000 Bbls. daily av.	Total stocks Oct. 31, 1928	481,798,000 Bbls.
		Increase in crude stocks in October	1,715,000 Bbls.
Total indicated demand	2,730,700 Bbls. daily av.	Stocks Oct. 31, 1927	459,773,000 Bbls.

Crude Oil

More than half of the 23,000-barrel gain in daily average crude oil production in October came in Oklahoma, where recovery rose more than 12,000 barrels daily average to 771,800 barrels. The Oklahoma production was within 100,000 barrels daily average of that state's all time record of 865,000 barrels reached in July, 1927. The rest of the increase was distributed through many states except California which was the only principal producing area to report a decline. The increase in Texas recovery was confined to the Gulf Coastal region alone.

The increase in Oklahoma came from the St. Louis pool, whose production averaged 15,000 barrels a day more than it did in September. Daily average production in the Seminole district fell 29,000 barrels.

Daily average production in the leading pools or districts in October and September compare:

	October	September
Seminole	328,000	347,000
St. Louis-Pearson	125,000	110,000
Panhandle	67,000	64,000
West Texas	350,000	362,000
Long Beach	193,000	198,000

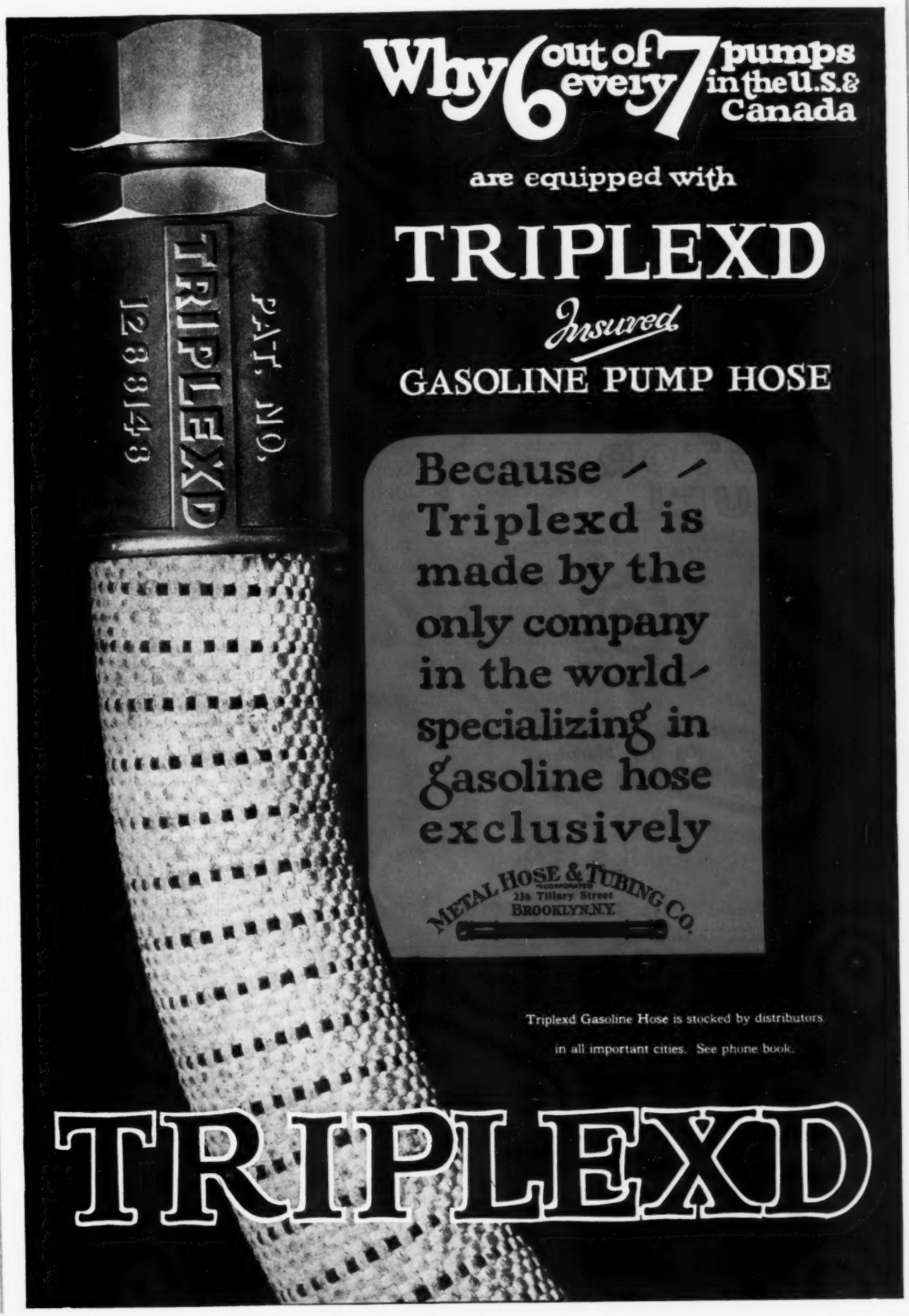
Although new peaks have been reached the last two months covered by the Bureau of Mines total crude oil production so far this year is under the 1927 record. In the first

Crude Oil Production by Fields — Barrels

Fields	Oct. Daily Avg.	Sept. Daily Avg.	Jan.-Oct. 1928 Total	Jan.-Oct. 1927 Total	Changes 1928 from 1927
Appalachian	88,800	82,400	25,868,000	25,495,000	+ 1.46
Lima-Indiana	4,600	4,300	1,437,000	1,575,000	— 8.76
Michigan	2,400	1,200	436,000	373,000	+16.89
Ill.-S. W. Indiana	20,800	19,600	6,225,000	6,497,000	— 4.19
Mid-Continent	1,615,900	1,603,000	457,864,000	454,573,000	+ 0.72
Gulf Coast	127,600	125,700	37,893,000	43,872,000	—13.63
Rocky Mountain	82,800	80,300	24,387,000	25,690,000	— 5.07
California	626,800	630,300	190,499,000	193,610,000	— 1.61
U. S. Total	2,569,700	2,546,800	744,609,000	751,685,000	— 0.94

Daily Average Runs to Stills — All Oils — Barrels

	East Coast	Appala.	Ind.-Ill.	Okla.-Kans.	Texas	La.-Ark.	Rocky-Mt.	Calif.	Total U. S.	
January, 1927	408,355	82,581	206,226	278,258	517,160	228,516	103,161	616,516	2,440,774	January, 1927
February	412,714	86,928	197,785	295,964	504,642	228,107	103,321	633,108	2,462,571	February
March	439,387	83,097	209,161	283,548	479,806	224,903	103,290	597,839	2,421,032	March
April	411,367	84,400	204,067	286,067	491,567	224,400	100,500	615,333	2,417,701	April
May	413,516	82,000	226,677	293,581	494,806	212,129	75,839	618,452	2,417,000	May
June	429,967	85,400	238,067	301,733	490,633	199,933	87,300	605,733	2,438,766	June
July	439,871	80,935	250,387	317,129	482,839	199,194	87,226	633,032	2,490,613	July
August	465,839	86,065	237,194	319,516	481,032	202,226	76,032	618,516	2,486,420	August
September	453,000	87,100	225,667	327,300	483,900	211,600	71,700	637,467	2,497,733	September
October	475,580	91,161	229,677	307,774	513,419	204,968	80,871	617,937	2,521,387	October
November	471,667	84,200	246,100	298,667	515,533	197,900	89,800	619,733	2,523,600	November
December	467,226	83,484	250,516	292,355	494,806	199,226	87,354	592,710	2,467,677	December
January, 1928	450,064	84,613	247,097	288,645	482,613	202,064	85,935	570,161	2,411,193	January, 1928
February	461,448	86,680	250,793	296,482	510,586	201,518	83,207	587,690	2,478,413	February
March	455,807	88,548	268,000	304,032	523,548	203,839	89,064	593,968	2,526,806	March
April	499,866	92,933	272,900	319,200	533,967	218,233	93,433	599,300	2,629,833	April
May	502.613	98,322	296.290	331,903	540,613	237.290	101,774	584.032	2,692,839	May
June	534,467	101,233	310,767	330,666	532,233	216,900	96,867	625,833	2,748,967	June
July	528.774	102,065	313,742	338,646	567,967	212,258	97,935	639,484	2,800,871	July
August	525,355	103,645	323,161	357,968	589,710	221.774	102,000	634,613	2,858,226	August
September	532,000	108,200	329,967	361,233	569,200	246,000	102,067	640,900	2,889,933	September
October	503,258	102,193	315,935	346,419	573,258	243,968	101,032	638,710	2,824,773	October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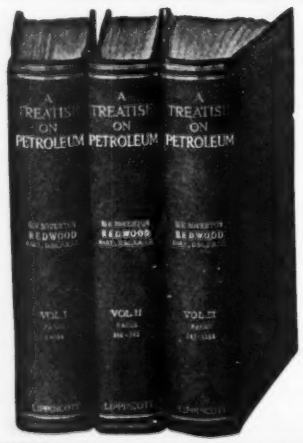

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10 months of this year production totaled 744,609,000 barrels which was 7,076,000 barrels or 0.74 per cent less than was produced in the first 10 months of 1927. These figures indicate that total crude oil production this year will probably rise a little above 890,000,000 barrels. Last year production totaled 901,129,000 barrels.

Production has been larger this year in the Appalachian, Michigan and Mid-Continent fields, the gain in the last mentioned field having exceeded 3,000,000 barrels.

Imports of crude oil were less in October than in September from the leading sources. Daily average imports the last two months covered by the bureau's reports were:

Place of Origin	October	September
Mexico	40,000	52,600
Venezuela	136,300	144,900
Colombia	24,500	36,200
Other countries	15,400	4,300
Total	216,200	238,000

Stocks of crude oil continued to increase in the Mid-Continent at both tank farms and refineries. Refiners east of California, as a unit, reduced their stocks of crude oil. Pipe line and tank farm stocks were increased more than 2,000,000 barrels. In California stocks of refinable crude were lowered 200,000 barrels, but stocks of heavy grades rose 534,000 barrels.

Runs to Stills

Daily average runs of all oils to stills in October were less than in September in all districts but Texas. The decline in the daily average was 65,160 barrels, 2.3 per cent. October runs were also smaller than August runs, but larger than runs in any other month this year.

Of the crude charged to stills in October 72,209,000 barrels was domestic and 7,394,000 barrels foreign. The volume of oils re-run was 4,690,000 barrels and natural gasoline used amounted to 3,275,000 barrels.

Less domestic and slightly more foreign crude was charged to stills in October than in September.

Crude Production—Barrels

(Daily Averages)

	Oct. 1928	Sept. 1928	Oct. 1927
Arkansas	86,700	85,800	102,100
California	626,800	630,300	627,400
Colorado	7,400	6,900	7,000
Illinois	18,000	16,900	17,900
Indiana	3,100	2,900	2,400
Kansas	96,800	94,300	106,900
Kentucky	21,200	19,800	19,000
Louisiana: Inland	37,600	37,800	48,700
Gulf Coast	17,900	20,900	7,600
Michigan	2,400	1,200	1,200
Montana	9,300	10,800	13,000
New Mexico	2,900	2,200	2,100
New York	7,600	7,100	6,100
Ohio	19,400	18,000	20,100
Oklahoma	771,800	759,200	800,300
Pennsylvania	28,300	26,600	26,700
Tennessee	100	100	200
Texas: Inland	623,000	625,900	487,500
Gulf Coast	109,700	104,800	122,200
West Virginia	16,500	14,900	16,100
Wyoming	63,200	60,400	52,000
Total U. S.	2,569,700	2,546,800	2,486,500

Stocks of Crude Oil

Domestic Unless Otherwise Specified. Amounts in Thousands of Barrels

	Oct. 31 1928	Sept. 30 1928	Sept. 30 1927
AT REFINERIES			
Districts			
East Coast: Domestic	8,235	7,955	8,772
Foreign	3,710	3,964	2,675
Appalachian	2,131	2,185	1,740
Indiana, Illinois, etc.	2,931	2,759	2,737
Oklahoma, Kansas, etc.	5,329	5,247	4,850
Texas Inland	1,712	1,767	1,677
Texas Gulf Coast:			
Domestic	7,663	8,189	7,473
Foreign	158	128	174
Ark. and Inland La.	936	852	402
Louisiana Gulf Coast:			
Domestic	4,220	4,656	5,643
Foreign	1,031	1,117	1,043
Rocky Mountain	1,774	1,680	1,368
U. S. East of Calif.	39,830	40,499	38,554
AT TANK FARMS IN PIPE LINES AND ELSEWHERE THAN REFINERIES			
Appalachian	5,263	5,445	6,541
Kentucky	835	846	1,080
Lima-Indiana	1,335	1,346	1,077
Ill., S. W. Indiana	11,463	11,527	12,100
Okla., Kans., Tex., except coastal	238,386	236,179	214,803
N. La.-Ark	25,972	26,017	25,546
Gulf Coast	18,753	18,299	18,244
Rocky Mountain	25,987	26,297	27,670
East of Calif. pipe line, tank farm stocks	327,994	325,956	307,061
Foreign Crude:			
Atlantic Ports	52	43	51
Gulf Ports	155	154	198
Total refinery, pipe line and tank farm stocks east of Calif.	368,031	366,652	345,864
California:			
20° and lighter	16,670	16,870	21,676
Heavier than 20°	97,097	96,563	92,233
Grand Total	481,798	480,085	459,773
CLASSIFICATION BY GRAVITY			
Elsewhere than at refineries east of California			
24° and lighter	319,279	317,164	297,336
Heavier than 24°	48,752	49,488	48,528

Gasoline

Gasoline output was curtailed in every refining district except California and the 3.87 per cent increase in production on the Pacific Coast failed to cause an increase in the daily average output for the whole country, which had an average decline of 0.98 per cent from the September output.

Shipments averaged 39,000 barrels less daily average, or 3.41 per cent less than in September, although October average shipments were larger than September shipments from the East Coast, Louisiana-Arkansas and California plants.

Stocks of gasoline increased in October in the Appalachian, Indiana-Illinois, Oklahoma-Kansas and Louisiana-Arkansas districts. The total increase in stocks was 48,000 barrels.

The gasoline situation in October, 1928, compares with that in September, 1927, as follows:

1. Domestic production was 5,416,000 barrels or 18.73 per cent *more*.
2. Imports were 732,000 barrels or 6.30 per cent *more*.
3. Total new supply was 5,439,000 barrels or 18.58 per cent *more*.
4. Domestic shipments were 5,113,000 barrels or 20.05 per cent *more*.
5. Exports were 90,000 barrels or 2.27 per cent *more*.
6. Total indicated demand was 5,203,000 barrels, or 17.66 per cent *more*.

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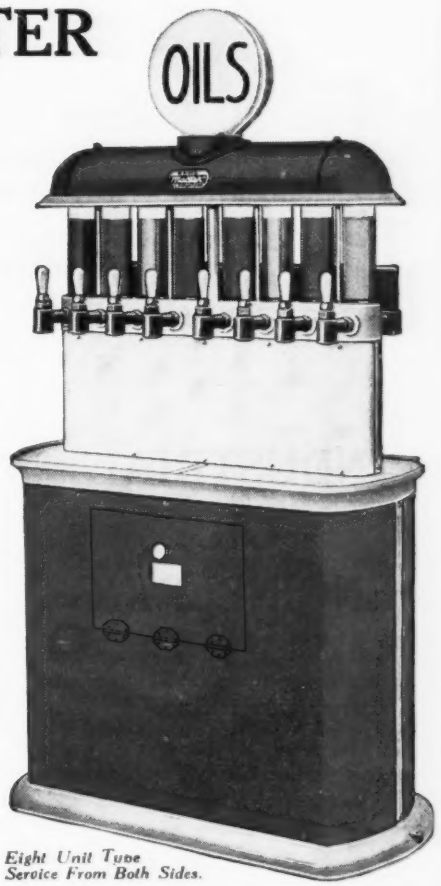

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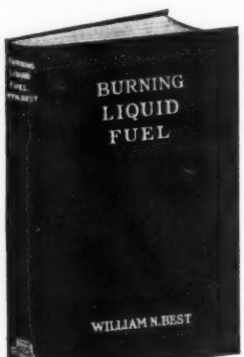

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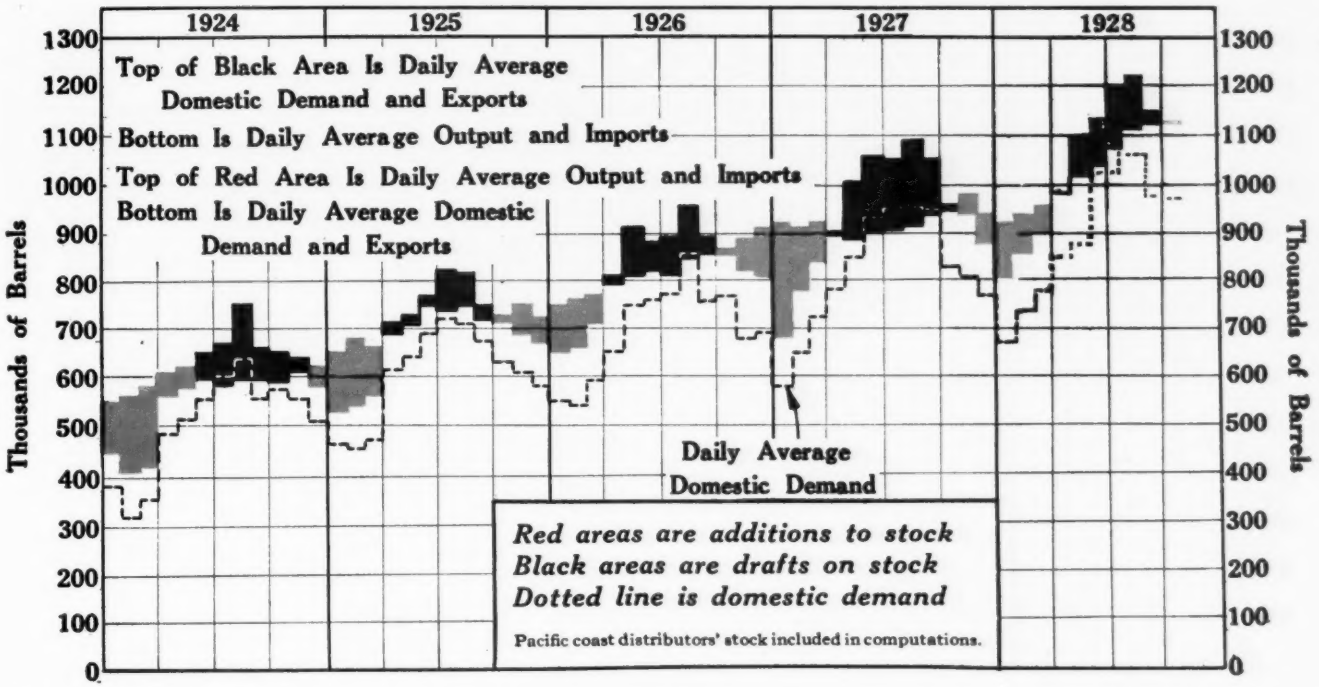
Gasoline Production and Consumption



October domestic production	1,107,000 Bbls. daily av.	October exports	131,000 Bbls. daily av.
October imports	13,000 Bbls. daily av.	Total indicated demand	1,118,000 Bbls. daily av.
Total new supply	1,120,000 Bbls. daily av.	Stocks Oct. 31,1928	26,453,000 Bbls.
October domestic shipments	987,000 Bbls. daily av.	Increase in stocks in October	48,000 Bbls.
		Stocks Oct. 31, 1927	29,551,000 Bbls.

7. Stocks of gasoline Oct. 31, 1928, were 3,097,000 barrels or 10.48 per cent *less* than stocks Oct. 31, 1927.

The gasoline situation in the first 10 months of 1928 compares with that in the first 10 months of 1927 as follows:

1. Domestic output was 35,917,000 barrels or 13.12 per cent *more*.

2. Imports were 723,000 barrels or 17.01 per cent *less*.

3. Total new supply was 35,185,000 barrels or 12.66 per cent *more*.

4. Domestic demand was 23,647,000 barrels or 9.46 per cent *more*.

5. Exports were 7,693,000 barrels or 20.44 per cent *more*.

6. Total demand was 31,340,000 barrels, or 9.82 per cent *more*.

7. Stocks Oct. 31, 1928, were 3,097,000 barrels or 10.48 per cent *less* than stocks Oct. 31, 1927.

Of the 34,319,000 barrels of gasoline produced at refineries in October, 19,512,000 barrels or 57 per cent was straight run, 11,532,000 barrels or 34 per cent cracked and 3,275,000 barrels or 9 per cent natural gasoline. This was a decline of 1 point in percentage of straight run and an increase of 1 point in percentage of natural gasoline used as compared with September production. When compared with the average for 1928 to Oct. 31, it was a decline of 2 points in proportion of straight run

Gasoline Supply and Demand — Barrels

	Production	Imports	Exports	Domestic Shipments	Stocks End of Month
January, 1927	27,960,000	520,000	3,557,000	17,888,000	46,058,000
February	25,024,000	416,000	3,544,000	18,240,000	49,714,000
March	27,886,000	493,000	3,219,000	22,646,000	52,410,000
April	26,577,000	377,000	3,614,000	23,31 1,000	52,379,000
May	26,787,000	490,000	4,468,000	26,579,000	48,609,000
June	26,616,000	590,000	4,248,000	27,799,000	43,768,000
July	28,118,000	190,000	3,223,000	29,784,000	39,069,000
August	28,010,000	348,000	4,193,000	29,779,000	33,455,000
September	27,716,000	515,000	3,539,000	28,409,000	29,738,000
October	28,903,000	365,000	3,959,000	25,497,000	29,550,000
Total Ten Months	273,597,000	4,304,000	37,624,000	249,992,000	29,550,000
November	28,558,000	417,000	3,724,000	24,400,000	30,401,000
December	28,512,000	282,000	3,154,000	23,718,000	32,323,000
1927 Total	330,667,000	5,003,000	44,442,000	297,928,000	.....
January, 1928	27,879,000	562,000	3,713,000	20,939,000	36,112,000
February	26,775,000	372,000	3,341,000	21,136,000	38,782,000
March	29,245,000	259,000	4,016,000	24,041,000	40,229,000
April	29,332,000	472,000	4,111,000	25,712,000	40,210,000
May	30,825,000	368,000	6,712,000	27,355,000	37,336,000
June	30,675,000	212,000	4,808,000	29,022,000	34,393,000
July	32,884,000	267,000	5,167,000	31,985,000	30,392,000
August	34,037,000	479,000	4,563,000	33,148,000	27,197,000
September	33,543,000	193,000	4,837,000	29,691,000	26,405,000
October	34,319,000	388,000	4,049,000	30,610,000	26,453,000
Total Ten Months	309,514,000	3,572,000	45,317,000	273,639,000	26,453,000

Gasoline Situation by Districts — Barrels

Districts	October Daily Avg. Output	September Daily Avg. Output	October Change %	October Daily Avg. Shipments	September Daily Avg. Shipments	October Change %	Stocks October 1928	Stocks September 1928	Stocks October 1927	
East Coast	155,581	155,700	— 0.08	155,839	145,167	+ 6.62	4,578,000	4,586,000	4,490,000	East Coast
Appalachian	45,710	47,467	— 3.70	44,258	46,700	— 5.23	810,000	765,000	847,000	Appalachian
Ind., Ill., etc.	168,064	172,733	— 2.78	160,871	174,667	— 7.90	3,648,000	3,425,000	3,225,000	Ind., Ill., etc.
Okla., Kans., etc.	180,161	186,267	— 3.28	176,097	181,633	— 3.05	2,120,000	1,994,000	2,337,000	Okla., Kans., etc.
Texas	239,193	243,067	— 1.59	240,161	269,833	—10.99	3,987,000	4,017,000	4,009,000	Texas
La. and Ark.	77,548	77,900	— 0.45	67,161	66,533	+ 0.94	1,669,000	1,347,000	1,433,000	La. and Ark.
Rocky Mountain	48,710	50,033	— 2.64	48,839	58,867	—17.03	928,000	932,000	1,408,000	Rocky Mountain
California	192,097	184,933	+ 3.87	212,290	200,100	+ 6.09	8,713,000	9,339,000	11,801,000	California
U. S. Total	1,107,064	1,118,100	— 0.98	1,105,516	1,144,500	— 3.41	26,453,000	26,405,000	29,550,000	U. S. Total
Texas Gulf Coast	182,000	187,333	— 2.85	186,903	211,833	—11.77	3,330,000	3,482,000	3,358,000	Texas Gulf Coast
La. Gulf Coast	28,290	58,367	—51.53	48,548	48,333	— 0.44	1,515,000	1,213,000	1,299,000	La. Gulf Coast

Natural Gasoline and Motor Blends — Barrels

Districts	Daily Avg. Production Oct. (net)	Daily Avg. Production Sept. (net)	Stocks End of October	Stocks End of September	Motor Fuel Blends Made in Oct.	Motor Fuel Blends Made in Sept.	Stocks Blends End of Oct.	Stocks Blends End of Sept.	Districts
Appalachian	6,067	5,397	45,762	49,595	7,190	7,405	5,738	5,381	Appalachian
Ill., Ky., etc.	922	793	6,952	6,762	1,309	1,524	214	285	Ill., Ky., etc.
Oklahoma	40,399	38,411	170,000	178,738	83,405	86,810	8,881	15,214	Oklahoma
Kansas	2,304	2,300	14,714	15,428	833	809	190	142	Kansas
Texas	23,348	22,301	99,548	109,500	17,667	16,214	1,595	2,286	Texas
Louisiana	3,686	3,731	17,738	20,452	690	1,238	381	476	Louisiana
Arkansas	2,073	2,142	5,905	6,953	.....	190	71	238	Arkansas
Rocky Mountain	3,225	3,333	13,143	17,809	.....	.....	71	24	Rocky Mountain
California	37,173	36,667	28,334	31,024	.....	.....	.....	.....	California
U. S. Total	119,197	115,075	402,096	436,261	111,094	114,190	17,141	24,046	U. S. Total

and a gain of 2 points in percentage of cracked gasoline, with the proportion of natural gasoline used the same in October as in the 10 months.

The recovery of gasoline from crude oil and other oils rerun in October was 36.8 per cent.

California gasoline shipped through the Panama canal to eastern United States ports totaled 1,601,000 barrels in October, compared with 1,269,000 barrels in September. In the first 10 months of this year such shipments totaled 13,604,000 barrels compared with 9,802,000 barrels in the corresponding period last year.

Lubricating Oil Supply and Demand — Barrels

	Production	Imports	Exports	Domestic Shipments	Stocks End of Month
January, 1927	2,570,000	1,000	864,000	1,496,000	7,867,000
February	2,345,000	.....	620,000	1,231,000	8,361,000
March	2,754,000	1,000	895,000	2,334,000	8,035,000
April	2,615,000	1,000	763,000	1,712,000	8,176,000
May	2,625,000	1,000	863,000	1,928,000	8,011,000
June	2,571,000	1,000	758,000	2,197,000	7,628,000
July	2,672,000	.....	993,000	1,811,000	7,496,000
August	2,752,000	1,000	754,000	2,004,000	7,491,000
September	2,782,000	.....	861,000	1,965,000	7,447,000
October	2,757,000	1,000	839,000	1,782,000	7,584,000
Total Ten Months	26,443,000	7,000	8,210,000	18,460,000	7,584,000
November	2,477,000	.....	798,000	1,739,000	7,524,000
December	2,801,000	.....	802,000	1,663,000	7,860,000
1927 Total	31,721,000	7,000	9,810,000	21,634,000	.....
January, 1928	2,658,000	.....	934,000	1,606,000	7,978,000
February	2,728,000	.....	841,000	1,533,000	8,332,000
March	2,905,000	.....	837,000	1,988,000	8,412,000
April	3,026,000	.....	1,059,000	2,362,000	8,018,000
May	3,091,000	.....	1,063,000	1,989,000	8,060,000
June	3,009,000	.....	1,095,000	2,143,000	7,832,000
July	2,827,000	.....	1,063,000	1,930,000	7,667,000
August	2,891,000	.....	813,000	2,035,000	7,711,000
September	2,833,000	.....	808,000	1,973,000	7,764,000
October	2,979,000	.....	769,000	2,145,000	7,830,000
Total Ten Months	28,947,000	.....	9,282,000	19,704,000	7,830,000

Kerosene Supply and Demand — Barrels

	Production	Imports	Exports	Domestic Shipments	Stocks End of Month
January, 1927	5,113,000	.....	1,616,000	3,882,000	8,190,000
February	4,453,000	1,000	1,399,000	2,590,000	8,655,000
March	4,802,000	3,000	1,351,000	3,356,000	8,753,000
April	4,608,000	1,000	1,861,000	2,776,000	8,725,000
May	4,663,000	1,000	1,633,000	3,188,000	8,568,000
June	4,308,000	2,000	1,616,000	2,695,000	8,567,000
July	4,484,000	.....	1,376,000	2,637,000	9,038,000
August	4,420,000	4,000	1,700,000	3,389,000	8,373,000
September	4,686,000	.....	1,659,000	3,280,000	8,120,000
October	4,884,000	1,000	2,211,000	3,469,000	7,325,000
Total Ten Months	46,421,000	13,000	16,422,000	31,262,000	7,325,000
November	4,824,000	27,000	1,821,000	2,514,000	7,841,000
December	4,869,000	15,000	1,237,000	3,819,000	7,669,000
1927 Total	56,114,000	55,000	19,480,000	37,595,000	.....
January, 1928	5,047,000	46,000	2,350,000	2,742,000	7,670,000
February	4,783,000	11,000	1,551,000	3,221,000	7,692,000
March	4,717,000	6,000	1,852,000	2,737,000	7,826,000
April	5,033,000	20,000	1,912,000	3,234,000	7,733,000
May	5,243,000	1,000	2,057,000	3,383,000	7,537,000
June	4,849,000	24,000	1,655,000	2,385,000	8,370,000
July	4,994,000	19,000	1,834,000	3,079,000	8,470,000
August	5,389,000	2,000	1,678,000	3,261,000	8,922,000
September	5,037,000	.....	2,000,000	3,276,000	8,593,000
October	5,186,000	55,000	1,755,000	3,465,000	8,614,000
Total Ten Months	50,278,000	184,000	18,734,000	30,783,000	8,614,000

Natural Gasoline

Daily average production of natural gasoline increased more than 4000 barrels in October. The largest increase in output was 2000 barrels daily average in Oklahoma.

Stocks of natural gasoline were lowered more than 34,000 barrels during October when refiners increased use of this product in the manufacture of motor fuel.

Output of blended motor fuels was slightly less than in September and stocks were reduced by almost 7000 barrels.

Kerosene

Daily average output of kerosene fell 610 barrels or 0.36 per cent from the September output. Shipments fell more than 12,000 barrels daily average to 677 barrels less than daily average output. This caused an increase of 21,000 barrels in stocks during October.

The kerosene situation in the first 10 months of 1928 compares with the situation in the first 10 months of 1927 as follows:

1. Domestic production was 3,857,000 barrels or 8.30 per cent *more*.

2. Imports were 17,000 barrels or 1315.40 per cent *more*.

3. Total new supply was 3,874,000 barrels or 8.34 per cent *more*.

4. Domestic demand was 479,000 barrels or 1.53 per cent *less*.

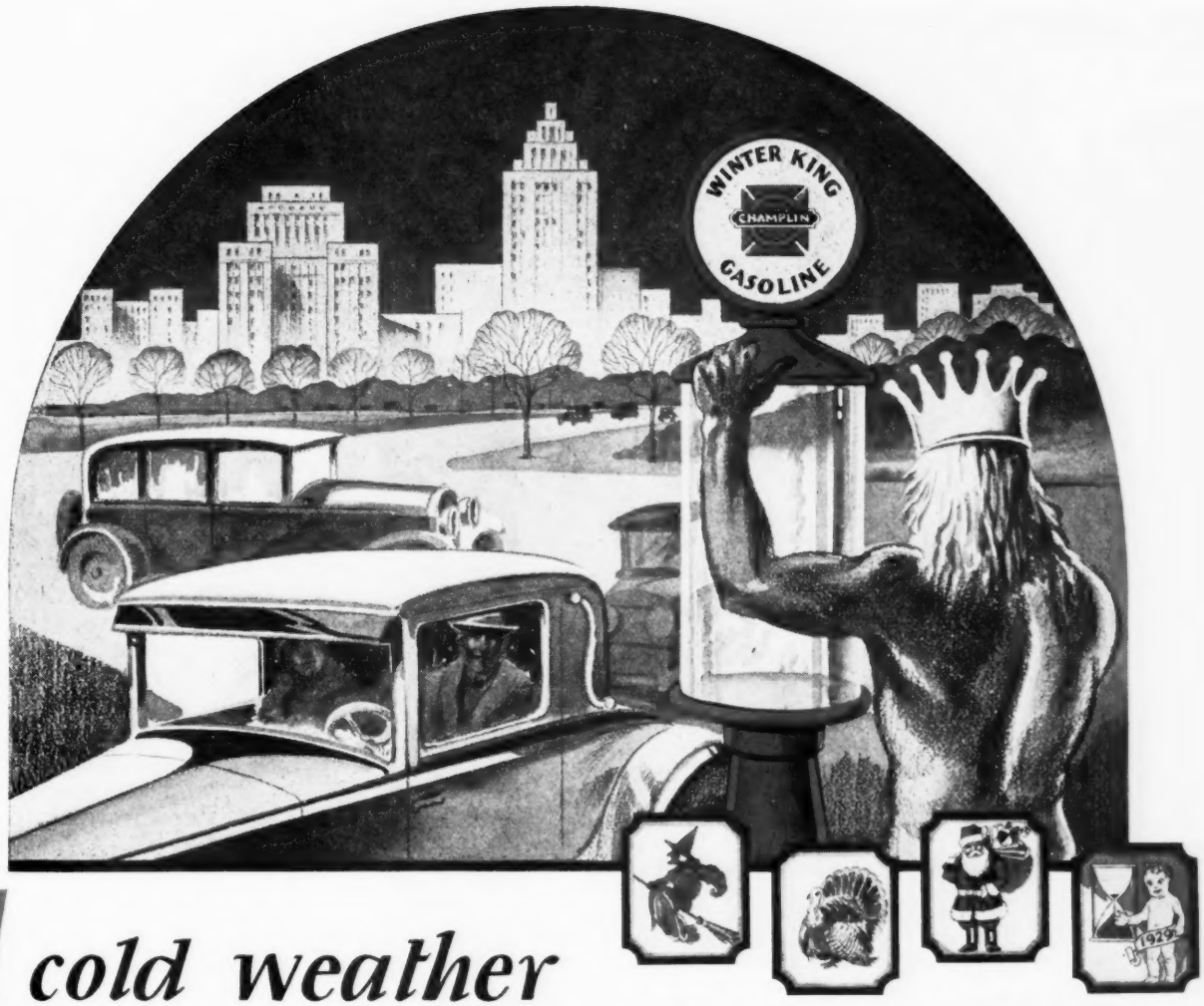
5. Export demand was 2,312,000 barrels or 14.08 per cent *more*.

6. Total demand was 1,833,000 barrels or 3.84 per cent *more*.

7. Stocks of kerosene Oct. 31, 1928, were 1,289,000 barrels or 17.60 per cent *larger* than stocks Oct. 31, 1927.

Kerosene Situation by Districts — Barrels

Districts	October Daily Avg. Output	September Daily Avg. Output	October Change %	October Daily Avg. Shipments	September Daily Avg. Shipments	October Change %	Stocks October 1928	Stocks September 1928	Stocks October 1927	Districts
East Coast	21,742	22,367	— 2.79	25,226	21,367	+18.06	1,339,000	1,447,000	1,399,000	East Coast
Appalachian	10,226	11,067	— 7.60	10,000	11,800	—15.25	302,000	295,000	298,000	Appalachian
Ind., Ill., etc.	16,903	18,767	+ 9.93	15,097	16,800	—10.14	1,394,000	1,338,000	857,000	Ind., Ill., etc.
Okla., Kans., etc.	26,935	29,867	— 9.82	23,806	30,400	—21.70	638,000	541,000	457,000	Okla., Kans., etc.
Texas	41,871	41,433	+ 1.05	47,774	37,900	+26.05	1,549,000	1,732,000	1,461,000	Texas
La. and Ark.	15,968	14,367	+11.14	20,710	15,033	+37.76	1,286,000	1,433,000	861,000	La. and Ark.
Rocky Mountain	4,839	5,532	—12.53	4,000	5,967	—32.96	246,000	220,000	177,000	Rocky Mountain
California	28,806	24,500	+17.57	20,000	39,600	—49.49	1,860,000	1,587,000	1,815,000	California
U. S. Total	167,290	167,900	— 0.36	166,613	178,867	— 6.85	8,614,000	8,593,000	7,325,000	U. S. Total
Texas Gulf Coast	32,322	32,767	— 1.36	39,226	29,700	+32.07	1,419,000	1,633,000	1,338,000	Texas Gulf Coast
La. Gulf Coast	14,613	12,633	+15.67	18,903	13,600	+38.99	1,267,000	1,400,000	848,000	La. Gulf Coast



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Lubricating Oils

Refiners increased their daily average output of lubricating oils 1663 barrels or 1.76 per cent in October. Shipments were 1.40 per cent larger on the daily average than in September but the average was still 2129 barrels daily less than production. Stocks of lubricants consequently rose 66,000 barrels in October.

The lubricating oil situation in the first 10 months of 1928 compares with that in the corresponding months of 1927 as follows:

1. Domestic output was 2,504,000 barrels, or 9.47 per cent *more.*
2. Imports, always of little consequence, were 6000 barrels *less.*
3. Total new supply was 2,498,000 barrels or 9.44 per cent *more.*
4. Domestic demand was 1,244,000 barrels or 6.73 per cent *more.*
5. Exports were 1,072,000 barrels or 13.05 per cent *more.*
6. Total demand was 2,316,000 barrels or 8.68 per cent *more.*
7. Stocks of lubricants Oct. 31, 1928, were 246,000 barrels or 3.24 per cent *more* than stocks Oct. 31, 1927.

Paraffin Wax

Production of paraffin wax was increased approximately 8 per cent in October over output in September. Export demand was less than the September demand but a rise in domestic demand failed to overcome the increase in output. So stocks were increased for the second consecutive month, the October gain being 7,459,000 pounds.

The paraffin wax situation in the first 10 months of 1928 compares with that in the first 10 months of 1927 as follows:

1. Domestic production was 36,912,000 pounds or 7.65 per cent *more.*
2. Imports were 4,192,000 pounds or 27.18 per cent *more.*
3. Total new supply was 41,104,000 pounds or 8.26 per cent *more.*
4. Domestic demand was 21,408,000 pounds or 9.05 per cent *more.*
5. Export demand was 63,624,000 pounds or 23.03 per cent *more.*
6. Total demand was 85,032,000 pounds or 14.23 per cent *more.*
7. Stocks Oct. 31, 1928, were 78,578,000 pounds or 46.12 per cent *less* than stocks Oct. 31, 1927.

Gas and Fuel Oils

Daily average output of gas and fuel oils at refineries was 41,400 barrels or 3.36 per cent less in October than in September. Only Texas refineries increased production.

Daily average shipments of fuel and gas oils from refineries east of California were almost 17,000 barrels daily average less than in September, but stocks at refineries were reduced 441,000 barrels. Figures for California are not available because vol-

Lubricant Situation by Districts — Barrels

Districts	October Daily Avg. Output	September Daily Avg. Output	October Change %	October Daily Avg. Shipments	September Daily Avg. Shipments	October Change %	Stocks October 1928	Stocks September 1928	Stocks October 1927	
East Coast	30,677	29,900	+ 2.60	30,484	30,200	+ 0.94	2,582,000	2,576,000	2,688,000	East Coast
Appalachian	14,000	14,333	— 2.32	14,161	13,300	+ 6.47	1,222,000	1,227,000	1,033,000	Appalachian
Ind., Ill., etc.	10,322	10,467	— 1.38	9,839	11,267	—12.67	733,000	718,000	705 000	Ind., Ill., etc.
Okla., Kans., etc.	7,355	7,033	+ 4.58	7,806	7,467	+ 4.54	422,000	436,000	422,000	Okla., Kans., etc.
Texas	24,000	21,767	+10.26	23,161	19,000	+21.90	1,721,000	1,695,000	1,692,000	Texas
La. and Ark.	2,871	3,233	—11.20	3,322	3,200	+ 3.81	101,000	115,000	99,000	La. and Ark.
Rocky Mountain	1,581	1,767	—10.53	1,258	1,500	—16.13	137,000	127,000	107,000	Rocky Mountain
California	5,290	5,933	—10.84	3,935	6,733	—41.56	912,000	870,000	838,000	California
U. S. Total	96,096	94,433	+ 1.76	93,967	92,667	+ 1.40	7,830,000	7,764,000	7,584,000	U. S. Total
Texas Gulf Coast	22,742	20,567	+10.57	21,742	17,867	+21.69	1,644,000	1,613,000	1,639,000	Texas Gulf Coast
La. Gulf Coast	2,742	3,167	—13.42	3,193	3,167	+ 0.82	99,000	113,000	98,000	La. Gulf Coast

umes of fuel grade crude oil and fuel oil produced at refineries are lumped together.

Stocks of gas and fuel oils were lowered at plants east of California except those in inland Texas, Louisiana, Arkansas, and Indiana-Illinois district.

State to Help Buckeye Marketers Boom Tours

CLEVELAND, Dec. 15.—State officials, historical societies and other organizations will cooperate with the Ohio Petroleum Marketers Association in promoting more automobile travel in this state. W. A. Milne, executive secretary of this association, told members of the Western Reserve Petroleum Club here Dec. 14.

The association is putting out a road map on which are located and numbered 59 points of interest historically in this state. These points are also briefly described alongside the map.

Mr. Milne said if the association could get the motorists of Ohio to drive 25 miles more than they ordinarily would drive over 30 week ends that the gallonage in the state would be increased 10 per cent.

He cited as an example of what can be done the effort of Hocking county, O., last summer in getting the attention of Ohio focused on historical points in that county. According to the Lanning Oil Co. of Logan, O., Mr. Milne said, approximately 150,000 persons visited Hocking county who had never been there before. The Lanning company helped to stimulate that interest which resulted in more sales of gasoline and oils by it and larger profits.

Paraffin Wax Supply and Demand — Pounds

	Production	Imports	Exports	Domestic Shipments	Stocks End of Month
January, 1927	54,114,000	460,000	29,228,000	17,842,000	192,835,000
February	47,363,000	2,048,000	23,623,000	20,171,000	198,452,000
March	53,644,000	910,000	28,205,000	23,461,000	201,340,000
April	48,917 000	1,505,000	25,421,000	15,322,000	211,019,000
May	46,267,000	729,000	25,228,000	25,458,000	207,329,000
June	44,938,000	400,000	24,200,000	29,659,000	198,808,000
July	47,979,000	2,789,000	25,970,000	32,105,000	191,501,000
August	41,576,000	2,656,000	34,229,000	20,859,000	180,645,000
September	47,888,000	3,040,000	31,780,000	29,621,000	170,172,000
October	49,476,000	887,000	28,342,000	21,826,000	170,367,000
Total Ten Months	482,162,000	15,424,000	276,226,000	236,311,000	170,367,000
November	48,146,000	3,132,000	32,541,000	17,404,000	171,700,000
December	54,039,000	1,906,000	30,569,000	29,862,000	150,638,000
1927 Total	584,347,000	20,462,000	339,336,000	283,590,000	
January, 1928	55,320,000	1,117,000	39,712,000	16,878,000	150,485,000
February	49,724,000	1,337,000	38,036,000	13,477,000	150,033,000
March	50,207,000	1,767,000	40,147,000	41,060,000	120,800,000
April	57,548,000	2,996,000	34,122,000	37,212,000	110,010,000
May	51,072,000	1,855,000	34,826,000	24,472,000	103,639,000
June	50,792,000	1,715,000	33,594,000	30,563,000	91,989,000
July	45,273,000	2,226,000	35,290,000	19,722,000	84,476,000
August	54,084,000	2,793,000	31,446,000	30,771,000	79,136,000
September	50,670,000	1,880,000	26,396,000	20,960,000	84,330,000
October	54,546,000	1,930,000	26,281,000	22,736,000	91,789,000
Total Ten Months	519,074,000	19,616,000	339,850,000	257,719,000	91,789,000

Gas and Fuel Oil Supply and Demand — Barrels

	Production	Imports	Exports	Domestic Shipments	Stocks End of Month
January, 1927	32,936,000	660,000	3,732,000	.....	*23,195,000
February	30,185,000	1,053,000	3,812,000	.....	*22,099,000
March	32,377,000	525,000	3,657,000	.....	*22,561,000
April	31,856,000	805,000	3,325,000	.....	*23,732,000
May	33,499,000	826,000	4,544,000	.....	*26,059,000
June	31,691,000	851,000	4,278,000	.....	*26,590,000
July	33,693,000	849,000	4,047,000	.....	*28,890,000
August	34,098,000	391,000	4,639,000	.....	*30,346,000
September	32,339,000	341,000	3,258,000	.....	*31,631,000
October	34,045,000	667,000	4,206,000	.....	*33,191,000
Total Ten Months	326,719,000	6,968,000	39,498,000	.....	*33,191,000
November	32,594,000	704,000	4,013,000	.....	*33,637,000
December	33,029,000	451,000	3,828,000	.....	*31,982,000
1927 Total	392,342,000	8,123,000	47,339,000	.....	
January, 1928	32,271,000	553,000	4,175,000	.....	*29,623,000
February	30,944,000	666,000	3,420,000	.....	*29,011,000
March	34,071,000	848,000	3,969,000	.....	*29,170,000
April	33,857,000	1,176,000	4,211,000	.....	*29,499,000
May	35,620,000	323,000	3,612,000	.....	*32,887,000
June	35,565,000	468,000	4,238,000	.....	*36,015,000
July	36,941,000	484,000	4,261,000	.....	*37,410,000
August	37,449,000	515,000	3,420,000	.....	*39,761,000
September	37,059,000	397,000	3,226,000	.....	*40,067,000
October	37,011,000	320,000	3,356,000	.....	*39,626,000
Total Ten Months	350,788,000	6,750,000	37,888,000	.....	*39,626,000

*These stocks for east of California only.

Gas and Fuel Oil Situation by Districts — Barrels

Districts	October Daily Avg. Output	September Daily Avg. Output	October Change %	October Daily Avg. Shipments	September Daily Avg. Shipments	October Change %	Stocks October 1928	Stocks September 1928	Stocks October 1927	
East Coast	238,516	267,100	—10.70	279,774	270,200	+ 3.54	7,401,000	8,680,000	10,566,000	East Coast
Appalachian	21,871	24,333	—10.12	23,000	19,800	+16.16	1,212,000	1,247,000	1,110,000	Appalachian
Ind., Ill., etc.	95,839	100,767	— 5.14	87,226	97,000	—10.08	3,821,000	3,554,000	2,057,000	Ind., Ill., etc.
Okla., Kans., etc.	106,742	111,900	— 4.83	109,064	98,867	+10.31	6,900,000	6,972,000	6,122,000	Okla., Kans., etc.
Texas	220,903	210,433	+ 4.97	213,645	234,433	— 8.87	12,629,000	12,404,000	9,397,000	Texas
La. and Ark.	111,548	113,000	— 1.28	94,548	96,333	— 1.85	6,349,000	5,822,000	3,308,000	La. and Ark.
Rocky Mountain	19,419	19,500	— 0.42	21,806	20,200	+ 7.95	1,314,000	1,388,000	631,000	Rocky Mountain
California	379,064	388,267	— 2.37	.....	.....	.....	.....	.....	.....	California
U. S. Total	1,193,902	1,235,300	— 3.36	1,208,129	1,225,100	— 1.38	39,626,000	40,067,000	33,191,000	U. S. Total
Texas Gulf Coast	149,677	144,067	+ 3.89	152,032	161,900	— 6.09	9,783,000	9,856,000	7,767,000	Texas Gulf Coast
La. Gulf Coast	67,484	66,500	+ 1.48	53,355	54,833	— 2.77	5,283,000	4,845,000	2,758,000	La. Gulf Coast

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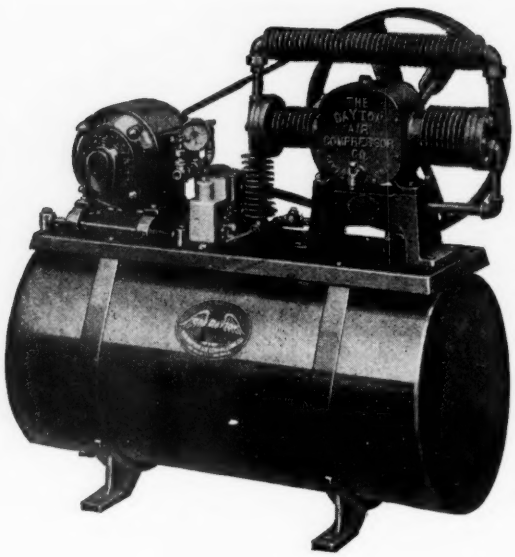

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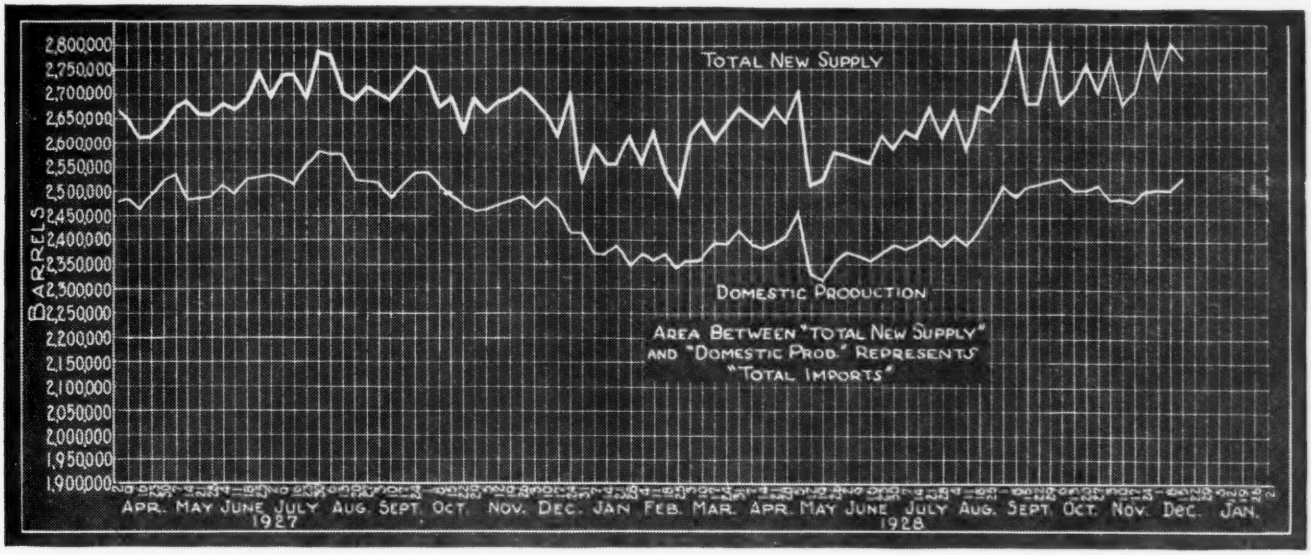
7 Dey Street - New York

Houston, Texas.....1514 Petroleum Bldg.
San Francisco, Cal.....444 Market St.
Los Angeles, Cal.....329 Petroleum Sec. Bldg.

Daily Average Crude Oil Production and Imports



Daily average gross output of United States, by fields, for week ending with dates below as compiled by American Petroleum Institute

PRODUCTION SUMMARY

	Dec. 15	Dec. 8
Production east of Rockies	1,849,200	1,841,250
Increase		7,950
Total production in U. S.	2,546,800	2,520,850
Increase		25,950
Crude oil imports	234,429	285,000
Decrease		50,571
Total crude supply	2,781,229	2,805,850
Decrease		24,621

OKLAHOMA

	Dec. 15	Dec. 8
North Braman	2,700	2,700
South Braman	1,350	1,300
Blackwell	3,250	3,300
Hubbard	2,250	2,300
Thomas	1,050	1,100
Tonkawa	11,800	11,750
Garber	7,050	7,050
Burbank	25,000	25,050
Osage, outside Burbank	25,950	25,950
Cushing	19,950	20,000
Yale Jennings	7,650	7,650
Davenport	1,700	1,650
Bristow-Slick	20,100	20,150
North Okmulgee	14,350	14,400
Pearson	1,850	1,950
Lyons-Deaner	4,200	4,250
St. Louis	133,950	128,150
Allen Dome	28,700	26,450
Cromwell	8,000	8,050
Papoose	4,000	4,000
Wewoka	5,350	5,400
Seminole	41,250	41,600
Bowlegs	47,400	48,100
Searight	10,100	10,400
Little River	87,950	95,600
Earlsboro	75,300	76,200
Duncan District	7,500	7,750
Graham	4,700	4,750
Fox	1,550	1,600
Healdton	13,500	13,650
Hewitt	8,900	9,000
Scholem Alechem	14,350	14,350
Others	64,350	59,700
Total Oklahoma	707,050	705,300
Increase		1,750

KANSAS

	Dec. 15	Dec. 8
Greenwood County	24,800	25,300
Florence-Covert	1,000	1,000
Peabody-Elbing	3,250	3,250
Eldorado-Towanda	12,900	12,900
Augusta-Fox-Bush	3,200	3,250
Rainbow Bend	1,250	1,250
Russell	3,700	3,700
Churchill	7,650	8,150
Oxford	6,650	7,450
Others	32,200	31,700
Total, Kansas	96,600	97,950
Decrease		1,350

NORTH LOUISIANA

	Dec. 15	Dec. 8
Homer	4,100	4,100
Haynesville	5,550	5,650
Caddo, light	9,100	9,150
Caddo, heavy	3,000	2,950
De Soto, Red River	4,100	4,100
Elm Grove	550	600
Bellevue	900	850
Cotton Valley	3,650	3,800
Urania	6,050	6,050
Pleasant Hill	500	500
Total, North Louisiana	37,500	37,750
Decrease		250

ARKANSAS

	Dec. 15	Dec. 8
El Dorado	4,950	4,950
Champagnolle	11,900	14,150
Smackover, light	7,100	7,150
Smackover, heavy	53,350	53,650
Stephens	1,050	1,000
Nevada	1,400	1,250
Lisbon	1,700	1,700
Others	100	100
Total, Arkansas	81,550	83,950
Decrease		2,400

TEXAS (Outside Gulf Coast)

Panhandle District

	Dec. 15	Dec. 8
Hutchinson County	28,900	28,000
Carson County	5,500	6,000
Gray County	23,000	24,350
Wheeler County	800	800
Others	3,000	3,450
Total, Panhandle District	61,200	62,600
Decrease		1,400

North Texas

	Dec. 15	Dec. 8
Burkburnett	11,000	10,000
Electra	13,000	12,950
Iowa Park and K-M-A	3,950	3,900
Wilbarger	33,000	33,100
Archer County	19,000	19,150
Montague-Cooke	10,050	9,950
Others	600	600
Total, North Texas	90,600	89,650
Increase		950

West Central Texas

	Dec. 15	Dec. 8
Stephens County	8,000	7,600
Eastland-Desdemona	6,950	7,050
Brown County	9,950	10,250
Coleman County	3,950	4,100
Callahan County	3,750	3,900
Shackleford County	10,250	10,400
Young County	8,500	8,550
Throckmorton County	750	800
Palo Pinto County	400	350
Jack County	1,200	1,300
Others	700	700
Total, West Central Texas	54,400	55,000
Decrease		600

West Texas

	Dec. 15	Dec. 8
Jones County	6,500	6,650
Mitchell and Scurry Counties	2,650	2,700
Howard County	36,600	36,600
Reagan County	17,150	17,050
Crane & Upton Counties	52,100	52,650
Crockett County	2,750	2,750
Pecos County	71,800	71,300
Winkler County	147,800	146,900
Others	1,950	1,700
Total, West Texas	339,300	338,300
Increase		1,000

East Central Texas

	Dec. 15	Dec. 8
Mexia	6,300	6,300
Currie	500	500
Richland	500	500
Wortham	1,500	1,500
Corsicana-Powell	9,900	9,900
Boggy Creek	2,800	2,850
Nigger Creek	700	700
Total, East Central Texas	22,200	22,250
Decrease		50

Southwest Texas

	Dec. 15	Dec. 8
Luling	13,300	13,400
Lytton Springs	1,000	1,100
Somerset	700	700
Laredo District	9,850	9,550
Dale	900	850
Salt Flat	7,100	4,400
Others	1,100	950
Total, Southwest Texas	33,950	30,950
Increase		3,000
Total, Texas—(Outside Gulf Coast)	601,650	598,750
Increase		2,900

GULF COAST

Coastal Texas

	Dec. 15	Dec. 8
West Columbia	7,400	7,650
Damon Mound	850	1,000
Big Creek	2,800	1,900
Boling	2,900	2,800
Blue Ridge	4,500	5,000
Pierce Junction	12,200	10,100
Humble	3,500	3,750
Goose Creek	6,400	6,600
South Liberty	6,300	5,650
Hull	10,350	10,550
Saratoga	950	950
Batson	1,300	1,350
Barber's Hill	950	500
Sour Lake	3,000	3,200
Spindletop	37,450	36,450
Orange County	3,200	3,300
Sugarland	4,750	4,800
Others	3,700	3,950
Total, Coastal Texas	112,500	109,500
Increase		3,000

Coastal Louisiana

	Dec. 15	Dec. 8
Vinton	4,200	4,050
Sulphur Dome	4,000	3,600
Lockport	3,900	3,900
Sweet Lake	1,200	1,400
Evangeline	850	900
East Hackberry	5,050	5,300
Edgerly	1,000	800
Sorrento Dome	1,200	1,500
Others	1,500	1,450
Total, Coastal Louisiana	22,900	22,900
Total Gulf Coast	135,400	132,400
Increase		3,000

ROCKY MOUNTAIN

Wyoming

	Dec. 15	Dec. 8
Salt Creek	33,200	29,750
Grass Creek	2,350	2,350
Elk Basin	800	1,000
Big Muddy	2,550	2,550
Lost Soldier	3,650	3,650
Rock Creek	2,200	2,250
Lance Creek	350	350
Oregon Basin	3,050	3,500
Others	5,750	5,500
Total, Wyoming	53,900	50,900
Increase		3,000

Montana

	Dec. 15	Dec. 8
Cat Creek	1,550	1,500
Sunburst	7,950	7,950
Pondera	1,800	1,400
Others	50	100
Total, Montana	11,350	10,950
Increase		400

Colorado

	Dec. 15	Dec. 8
Moffat (Craig)	1,200	1,150
Fort Collins	2,100	2,050
Florence	1,300	1,350
Others	2,350	2,350
Total, Colorado	6,950	6,900
Increase		50

New Mexico

	Dec. 15	Dec. 8
Table Mesa	100	100
Hogback	500	550
Artesia	1,100	1,050
Rattlesnake	1,950	2,600
Others	100	100
Total, New Mexico	3,750	4,400
Decrease		650
Total, Rocky Mountain	75,950	73,150
Increase		2,800

California

	Dec. 15	Dec. 8
Santa Fe Springs	92,500	76,500
Long Beach	190,000	190,000
Huntington Beach	50,200	50,500
Torrance	15,500	16,000
Dominguez	10,000	10,000
Rosecrans	6,800	6,500
Inglewood	27,600	27,600
Midway-Sunset	75,000	75,000
Ventura Avenue	52,000	52,000
Seal Beach	29,500	28,500
Others	148,500	147,000
Total California	697,600	679,600
Increase		18,000

Eastern

	Dec. 15	Dec. 8
(Including Ill., Ind., Ky., O., W. Va., Pa., and N. Y.)	113,500	112,000
Increase		1,500

Compilation Of Mid-Continent Refinery Operations

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National Petroleum News

Mid-Continent Refinery Operations Week Ended December 14 (By Telegraph)

	Kansas	Oklahoma	North & Cent. Texas	North La.-Ark.	Total Week Ended Dec. 14	Total Week Ended Nov. 16
Plants Reporting	12	29	28	12	81	81
Da. Av. Cap. (bbls.)	92,000	160,200	125,100	54,900	432,200	432,200
Da. Cracking Capacity	30,700	52,600	17,200	22,700	123,200	123,200
Da. Av. Crude Runs	59,977 + 1.6	97,795 + 4.4	83,119 — 0.2	57,785 + 6.2	298,676 + 2.8	315,112
Da. Av. Other Oils	8,126 + 3.5	7,586 + 56.2	6,335 + 5.1	2,527 — 23.2	24,574 + 11.6	17,562
GASOLINE—Gallons						
Stocks, Dec. 7	12,932,000	36,708,000	22,707,000	6,821,000	79,168,000	63,664,000
Prod. 12-7 to 12-14	9,653,000 + 0.7	16,386,000 + 9.7	9,576,000 + 4.0	5,387,000 — 11.6	41,002,000 + 3.0	42,867,000
Ship. 12-7 to 12-14	9,378,000 + 11.8	14,707,000 — 0.7	8,332,000 — 7.4	5,504,000 — 8.2	37,921,000 — 0.7	37,799,000
Stocks, Dec. 14	13,207,000 + 2.1	38,387,000 + 4.6	23,951,000 + 5.5	6,704,000 — 1.7	82,249,000 + 3.9	68,732,000
Ratio Sales to Prod	97.2%	89.8%	87.0%	102.2%	92.5%	88.2%
KEROSENE—Gallons						
Stocks, Dec. 7	7,925,000	5,567,000	1,983,000	339,000	15,814,000	16,236,000
Prod. 12-7 to 12-14	1,842,000 + 8.2	2,141,000 + 5.1	1,481,000 — 20.7	565,000 + 93.5	6,029,000 + 2.2	6,257,000
Ship. 12-7 to 12-14	2,665,000 + 42.7	1,336,000 — 40.5	1,616,000 — 5.0	262,000 — 12.4	5,879,000 — 3.8	6,792,000
Stocks, Dec. 14	7,102,000 — 10.4	6,372,000 + 14.5	1,848,000 — 6.8	642,000 + 89.4	15,964,000 + 0.9	15,701,000
Ratio Sales to Prod	144.7%	62.4%	109.1%	46.2%	97.5%	108.6%
STOVE DISTILLATE—Gallons						
Stocks, Dec. 7	2,021,000	3,083,000	621,000	40,000	5,765,000	6,449,000
Prod. 12-7 to 12-14	267,000 + 39.8	776,000 + 46.4	458,000 + 65.3	95,000 — 7.8	1,596,000 + 45.0	1,165,000
Ship. 12-7 to 12-14	258,000 + 2.0	1,199,000 + 5.5	241,000 +119.1	81,000 — 17.3	1,779,000 + 11.4	1,247,000
Stocks, Dec. 14	2,030,000 + 0.4	2,660,000 — 13.7	838,000 + 34.9	64,000 + 35.0	5,582,000 — 3.2	6,367,000
Ratio Sales to Prod	96.6%	154.5%	52.6%	85.3%	111.5%	107.0%
GAS OIL—Gallons						
Stocks, Dec. 7	5,607,000	29,165,000	13,575,000	5,993,000	54,340,000	56,288,000
Prod. 12-7 to 12-14	1,434,000 — 5.0	1,576,000 — 25.6	1,727,000 + 6.1	2,458,000 + 4.4	7,195,000 — 5.4	8,510,000
Ship. 12-7 to 12-14	1,936,000 + 3.8	2,313,000 — 22.0	2,221,000 + 97.9	2,775,000 + 18.2	9,245,000 + 11.4	6,671,000
Stocks, Dec. 14	5,105,000 — 9.0	28,428,000 — 2.5	13,081,000 — 3.6	5,676,000 — 5.3	52,290,000 — 3.8	58,127,000
Ratio Sales to Prod	135.0%	146.8%	128.6%	112.9%	128.5%	78.4%
FUEL OIL—Gallons						
Stocks, Dec. 7	27,506,000	53,250,000	67,257,000	21,559,000	169,572,000	189,173,000
Prod. 12-7 to 12-14	5,685,000 + 1.4	6,437,000 + 24.2	11,755,000 + 6.0	8,743,000 + 0.1	32,620,000 + 6.6	30,814,000
Ship. 12-7 to 12-14	8,510,000 + 36.0	8,008,000 + 0.9	13,106,000 — 0.1	9,579,000 — 0.5	39,203,000 + 6.1	36,729,000
Stocks, Dec. 14	24,681,000 — 10.3	51,679,000 — 3.0	65,906,000 — 2.0	20,723,000 — 3.9	162,989,000 — 3.9	183,258,000
Ratio Sales to Prod	149.7%	124.4%	111.5%	109.6%	120.2%	119.2%

Gasoline Produced by Various Methods, Week Ended December 14

	Kansas	% of Total	Oklahoma	% of Total	Texas	% of Total	Louisiana-Arkansas	% of Total	Total	% of Total
Straight Run	5,966,000	61.8	10,247,000	62.5	7,479,000	78.1	2,239,000	41.6	25,931,000	63.3
Cracked	3,008,000	31.2	5,349,000	32.7	1,733,000	18.1	2,588,000	48.0	12,678,000	30.9
Natural	679,000	7.0	790,000	4.8	364,000	3.8	560,000	10.4	2,393,000	5.8
Total	9,653,000		16,386,000		9,576,000		5,387,000		41,002,000	

+ or — columns are % change from previous week.

Large Draft Is Made on Fuel Oil Stocks

Staff Special—By Telegraph
TULSA, Dec. 18

FUEL oil stocks at 81 Mid-Continent refineries were reduced approximately 6,500,000 gallons the week ended Dec. 14 although production was approximately 2,000,000 gallons more. Shipments increased approximately 2,300,000 gallons.

In the four weeks ended Dec. 14 refiners reduced fuel oil stocks 20,269,000 gallons. Shipments in the 4 weeks were 148,404,000 gallons as compared with production of 128,135,000 gallons.

Fuel oil production in Kansas the last week was virtually unchanged while shipments increased 36 per cent. Oklahoma refiners increased production 24.2 per cent and their shipments increased only 0.9 per cent. Texas, Arkansas and Louisiana refiners in-

Summary for the Month

Production and shipments, all reporting refineries, for four weeks ended Dec. 14. Change in stocks figured from Nov. 16.

	Gallons
GASOLINE	
Production	166,021,000
Shipments	152,504,000
Net change in stocks	+13,517,000
Ratio sales to production	91.9%
KEROSENE	
Production	24,263,000
Shipments	24,000,000
Net change in stocks	+263,000
Ratio sales to production	98.9%
STOVE DISTILLATE	
Production	5,106,000
Shipments	5,891,000
Net change in stocks	—785,000
Ratio sales to production	115.4%
GAS OIL	
Production	29,807,000
Shipments	35,644,000
Net change in stocks	—5,837,000
Ratio sales to production	119.6%
FUEL OIL	
Production	128,135,000
Shipments	148,404,000
Net change in stocks	—20,269,000
Ratio sales to production	115.8%

creased production slightly while their shipments fell off.

Distillate production was increased 400,000 gallons or 45 per cent. Shipments increased almost 200,000 gallons or 11.4 per cent. Stocks were reduced approximately 200,000 gallons or 3.2 per cent. In the four-week period stocks were reduced 785,000 gallons. Dec. 16, 1927, distillate stocks at virtually the same group of plants totaled 10,930,000 gallons as compared with 5,582,000 gallons Dec. 14, 1928. Production and shipments were increased in Kansas, Oklahoma and North Texas.

Gas oil was the only other major commodity to show a reduction in stocks. Production was off 5.4 per cent while shipments increased 11.4 per cent. Stocks were reduced 2,100,000 gallons. Each field showed a reduction. In the last four weeks shipments totaled 35,644,000 gallons and production 29,807,000 gallons causing a dratt on stocks of 5,837,000 gallons.

Crude runs were increased approximately 8,000 barrels daily average. Kansas refiners increased their cnarges 1.6 per cent, Oklahoma refiners 4.4 per cent, Texas refiners 0.2 per cent and Arkansas-Louisiana refiners 6.2 per cent.

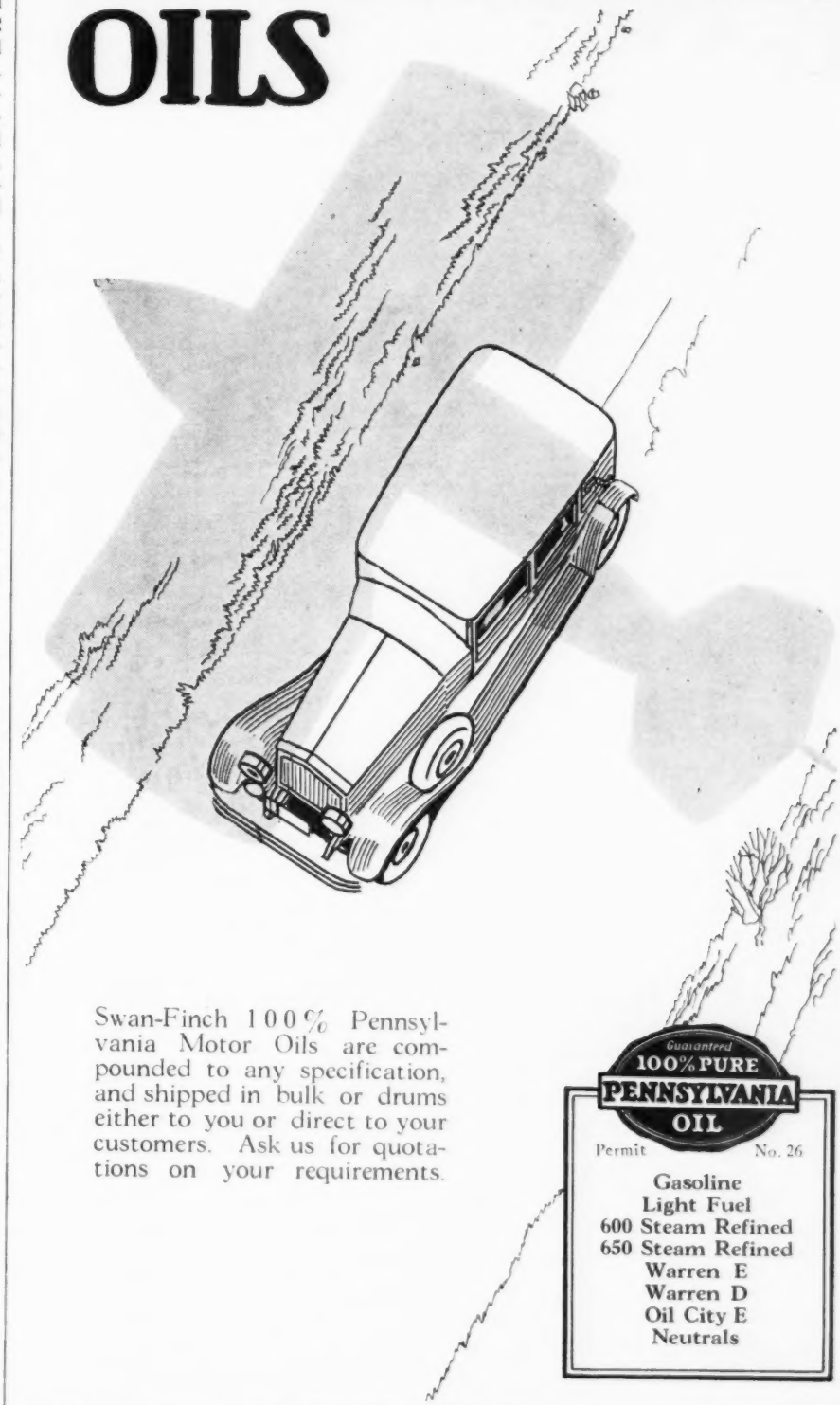
The increase in crude runs caused an increase in gasoline production of approximately 1,200,000 gallons to 41,002,000 gallons. Shipments fell 0.7 per cent, or 200,000 gallons, to 37,921,000 gallons. Stocks were increased 3,000,000 gallons to 82,249,000 gallons Dec. 14. This total is approximately 10,000,000 gallons larger than stocks Dec. 16, 1927. For the week ended that date crude runs totaled only 263,007 barrels daily average.

Kerosene production increased slightly while shipments lost ground. Production for the field was 6,029,000 gallons with shipments 5,879,000 gallons. Kansas and Texas refiners reduced stocks while the other fields increased stocks fractionally. Kansas refiners increased production 8.2 per cent and shipments 42.7 per cent. Texas refiners reduced production 20.7 per cent while shipments fell off only 5 per cent. Oklahoma refiners increased their production 5.1 per cent while business was off 40.5 per cent. The Arkansas and Louisiana refiners increased production 93.5 per cent and shipments fell off 12.4 per cent.

LOS ANGELES, Dec. 14.—W. G. (Walter) Swaney, general manager of Kerotest Manufacturing Co., Pittsburgh, is spending some time in California. His return trip will take him through west Texas and the Mid-Continent.

LOS ANGELES, Dec. 14.—Charles C. La Clare, oil industry representative of Plymouth Cordage Co., Plymouth, Mass., is spending about three weeks in California.

PENNSYLVANIA OILS



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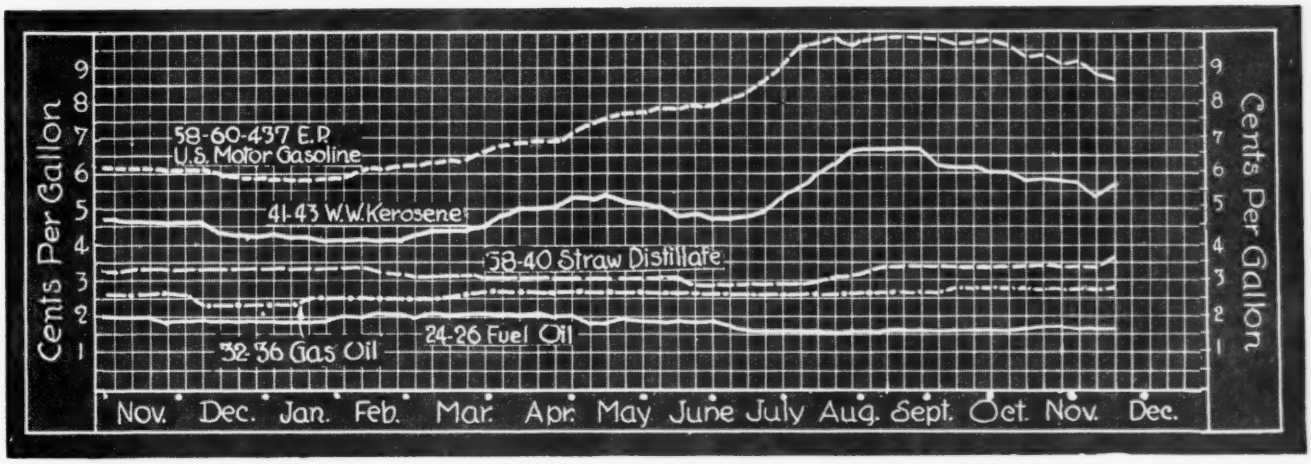
Refinery - Tank Wagon Markets

National Petroleum News

Current Prices of Principal Mid-Continent Refined Products



Prices shown are on Group 3 basis and extended to date shown in Refinery Market Tables Section of this issue

Export Gasoline Bought, Naturals Fall, Distillates Active in Mid-Continent

Staff Special
TULSA, Dec. 15

PURCHASE of more than 5,000,000 gallons of gasoline and 500,000 gallons or more of kerosene from Mid-Continent refiners for export, and inquiries for more goods furnished the only features in the Mid-Continent refinery market the second week of December.

Domestic gasoline demand was comparatively light and prices of virtually all grades fell 0.25 to 0.50-cent.

Natural gasolines continued in the slump into which they drifted shortly before Dec. 1. Prices broke sharply and no heavy buying was reported.

Except for the export buying kerosenes were quiet. A few refiners reported stocks were accumulating faster than they had expected.

Distillates were in active demand. With goods becoming scarcer prices moved up fractionally. Gas oils also were in better demand.

Fuel oils were steady. Wax was higher in price with an improvement in demand for this month.

Gasolines

The Atlantic Refining Co. Dec. 10 and 11 bought more than 5,000,000 gallons of 61-63, 390 end point, and 64-66, 375 e.p. gasolines for export. Some of the business was placed with north Texas refiners, some with Arkansas refiners, some with Oklahoma refiners and the remainder with one large company in Kansas.

A price of 8.625 cents a gallon, Group 3, was paid for the 61-63, 390 e.p. gasoline, and 9 cents, north Texas, was reported paid for the 375 end point gasoline. The bulk of the goods bought from the company in Kansas was 390 e.p. gasoline, it was reported.

Two other export companies immediately made tentative inquiries, but as far as could be learned before close of business Dec. 15, no new purchases had been made. One company was reported to have offered an Arkansas refiner 7.75 cents a gallon, f.o.b. refinery, for U. S. Motor for export. The refiner turned down the offer as being too low at present.

While the export purchases were rather widespread, virtually no reaction was noted in the domestic gasoline market.

Jobber buying in most of the Middle West was lighter during the second week of December than in the first before. The market rapidly is slipping into the usual holiday lull when only routine matters get much attention.

Several Oklahoma refiners reduced their quotations on gasolines, bringing their new prices more nearly in line with prices in effect in territories adjacent to Oklahoma. Several refiners who around Dec. 1 were quoting 9 to 9.25 cents for 58-60 U. S. Motor have reduced their prices to 8.50 cents a gallon. Only two reporting refineries in Oklahoma now are obtaining more than 8.50 cents for their U. S. Motor.

A few reporting refiners are moving their U. S. Motor at prices ranging from 8 to 8.50 cents. About the same number of nonreporting refiners are moving their output at the same price range.

The reduction in quotations by several of the larger refineries has tended to stabilize the price structure for the entire Mid-Continent. There apparently has not been the tendency noted several days ago for refiners in the Texas, Arkansas and Louisi-

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ana districts to send out quotations f.o.b. Group 3 at levels considerably under the prices asked by the Group 3 refiners.

Natural Gasolines

Natural gasoline prices fell again when buyers still remained out of the market except for immediate needs. Prices were 0.25 to 0.50-cent lower Dec. 15 than they were Dec. 8.

For the first time since the Natural Gasoline Association of America included both corrosion and doctor tests in specifications, enough sour gasoline has been placed on the market to exert pressure on full specification goods. Gasoline which except for the corrosion and doctor tests meets grade C specifications has been offered this week at 6.50 cents, whereas specification grade C has been freely offered at 7 cents a gallon.

A slight increase in buying for over December was reported Dec. 14 and 15. One manufacturer sold a quantity of grade C for delivery the remainder of December at 6.50 cents a gallon. His spot price remained 7 cents. Much of this buying was attributed to the desire of the buyer to get his requirements taken care of before the holidays.

Kerosenes

Approximately 300,000 gallons of 41-43 gravity kerosene was bought for export Dec. 11 by Sinclair Refining Co. The price paid was 5.125 cents a gallon, north Texas rate. The goods were sold as 18 color or better. The same company bought approximately 200,000 gallons of 40 gravity water white kerosene from a north Texas refiner at 5 cents a gallon.

Inquiries were also made of Arkansas refiners but apparently no orders were placed in that district. Reports Dec. 15 that some kerosene had been bought from a Kansas refiner could not be confirmed.

Refiners in north Texas, Oklahoma and Kansas report domestic demand for kerosene has been light all week. The Louisiana and Arkansas refiners have been able to keep up their orders in step with production. Several refiners in Oklahoma and Kansas say they have found demand lighter than anticipated and their stocks are accumulating faster than they had hoped for this season of the year.

Distillates and Gas Oil

Refiners making distillates meanwhile are finding demand brisk as colder weather settled over much of the Middle West. Prices in Oklahoma and Kansas advanced 0.125 to 0.25-cent a gallon. One buyer said he had gone to two refiners this week whom he felt sure could supply him with goods, only to learn that they had withdrawn from the market, and that their contracts were taking so much that they had been forced to increase distillate production slightly.

Distillate stocks in hands of the

81 refiners that report weekly operations to NATIONAL PETROLEUM NEWS are considerably lower than stocks on hand a year ago. Stocks were steadily reduced from this time last year until in March, 1928, the reduction for the period amounting to something over 8,000,000 gallons. That reduction is more than total stocks now on hand. If demand is as brisk until next March as it was a year ago, refiners are either going to have to jump up distillate production considerably, or the trade is going to find goods extremely scarce on the open market.

Low cold test gas oil also have been in better demand at unchanged price levels. Ordinary U. G. I. gas oil has been quiet.

Fuel Oils

Railroads apparently are the only ones interested at present in making fuel oil contracts. Both the Frisco and Santa Fe roads have been attempting to negotiate some contracts for next year. Both are seeking contracts on a lower basis than present contracts. It is understood the Santa Fe is paying around 95 cents a barrel at present for its fuel oil.

The Frisco road is understood to have offered a contract with a 72.5-cent minimum and a 92.5-cent maximum based on 38.9 gravity crude oil, with a proviso for 60 per cent of any crude change, except the first change upward. In other words should there be a crude advance of 25 cents after the contract is made, the advance will have no effect on the price. It will take two advances before the 60 per cent clause becomes operative.

Spot prices for fuel oil have remained virtually unchanged. Demand has been steady in most quarters with some buying for over the remainder of the month.

Neutral Oils, Cylinder Stocks, Wax

No changes were noted in prices of neutral oils or cylinder stocks. All grades have been quiet. Bright stock continued active and comparatively scarce, a majority of refiners reported.

Wax prices showed some improvement during the week. Sales were made for the remainder of December and the first half of January at prices ranging from 4.875 to 5.125 cents a barrel. Demand was reported considerably better than in November.

ELDORADO, Kāns., Dec. 15.—Robert H. Hazlett, vice-president of the El Dorado Refining Co. here, was one of the exhibitors at the annual International Livestock Exposition at Chicago. His Hereford cattle won several prizes. Mr. Hazlett has been for a number of years a breeder of fine cattle at his farm, Hazford Place, near here. He was elected a director of the Exposition to succeed the late A. B. Cook of Montana.

Chicago Resale Market

Gasoline Top Prices Fall

Staff Special
CHICAGO, Dec. 15

CHICAGO resale gasoline market was on a more substantial basis Dec. 15 in the opinion of most of the trade.

Dec. 8 most sellers were quoting 58-60 U. S. Motor gasoline at 8.25 to 9 cents. Dec. 10 practically all those refiners, who had been holding for 9 cents, reduced their price to 8.75 cents and by Dec. 13 most of them were down to 8.50 cents. The low of the market remained practically unchanged with most Chicago marketers getting 8.25 cents up for their U. S. Motor gasoline. Gasoline was obtainable below 8.25 cents but in most cases the seller would not guarantee the goods to meet U. S. Motor specifications. The bulk of 58-60 U. S. Motor gasoline sold in Chicago Dec. 15 was at 8.25 to 8.50 cents, Group 3, with most goods coming out of Oklahoma, north Texas or plants in this area.

Marketers reported they could buy 58-60 U. S. Motor for resale at 8 and 8.125 cents in Oklahoma and were holding for a 0.25-cent profit whenever possible. Most of them said their buying prices were no lower Dec. 15 than they were Dec. 8.

Sales of west Texas gasoline were reported at 7.75 to 8 cents, Group 3 base. Most of this was 56-58 gasoline with a 437 e.p. Gasoline from Louisiana and Arkansas moved into Ohio and Michigan points at around 8.25 cents f.o.b. refinery.

The unsettled rainy weather was credited by some sellers with slowing down spot gasoline demand. However, most of the trade said they were enjoying a fairly steady call for spot U. S. Motor. As usual, most of these orders were for one and two-car lots and occasionally for rush shipment. Several refiners reported their contract buyers were still taking out the maximum of their contracts.

Considerable interest was shown by Chicago oil men in the 25-cent advance in Pennsylvania grade crudes Dec. 14. This brings Pennsylvania crude within 5 cents of its high point since June, 1924. Most of the trade were of the opinion that this change would have little, if any, effect on the local market.

Demand for higher gravity gasolines was quiet this week. Prices were off approximately 0.25-cent over the week. Buying of these grades in Mid-Continent for export shipment helped some to take the excess goods off the market.

The 60-62, 437 e.p. gasoline opened Dec. 10 at 8.50 to 9 cents and moved at 8.375 to 8.75 cents after Dec. 12. Most sales of 60-62, 400 e.p. were at 9.125 to 9.25 cents up to Dec. 12. and at 9 to 9.25 cents thereafter. The bulk of movement of 64-66, 375 e.p. grade was at 9.75 to 10 cents over the week.

The kerosene market was decidedly dull all week. Little demand was reported although prices were showing little signs of any heavy decline. Price range of 41-43 w.w. kerosene was 5.625 to 5.75 cents until Dec. 12 and 5.50 to 5.75 cents the rest of the week.

The warmer weather of the past week slackened demand for furnace oils, most of the trade reported, although demand was still excellent in some quarters. Prices were generally unchanged on all grades except 32-36 straw zero gas oil, which was 0.125-cent higher. Low cold test, low flash distillate and gas oils were still comparatively scarce and most sellers anticipate higher prices with any prolonged cold weather. Industrial concerns were in the market for their normal supplies of fuels.

A few sales of 38-40 straw distillate were reported at 3.375 and 3.625 cents but the majority were at 3.50 cents. The 32-36 ordinary dark gas oil was unchanged over the week at 2.50 to 2.625 cents, while the zero grade brought 2.75 to 3 cents. The 32-36 straw zero gas oil moved at 2.875 to 3.125 cents until Dec. 12 and at 3 to 3.25 cents thereafter.

Fuel oil prices were generally unchanged over those prevailing in the past few weeks. Zero cold test 28-30 fuel moved at $0.875 to $0.925 and higher cold test goods at $0.825 to $0.85. Fuel oil of 24-26 gravity was $0.65 to $0.675. Low sulfur 18-22 fuel sold mostly at $0.60 to $0.65 with high sulfur goods at $0.525 to $0.55.

Rather frequent precipitation will occur in Standard of Indiana territory next week with temperatures above normal most of the week. However, temperatures will fall toward the end of the week, says the Chicago weather bureau.

Sells Muskogee Stations

TULSA, Dec. 15.—Otha H. Grimes has sold a group of five service stations and one bulk station in Muskogee, Okla., to the High Test Oil Corp., subsidiary of the Shaffer Oil & Refining Co. Properties were transferred Dec. 4.

Refinery Markets on Light Oils and Lubricants

Prices given below are in cents per gallon, F. O. B. refinery, except where $ is shown

(These Refinery Prices compiled in the OIL PRICE HANDBOOK for a whole year)

GASOLINE AND NAPHTHA

OKLAHOMA (Weighted Average Prices)

	Prices Dec. 17	Prices Dec. 10	Prices Dec. 3
58-60 U.S. Motor, 437 e.p.	8.6250	8.7976	9.0680
60-62 437 e.p. gasoline....	8.9886	8.9791	9.1786
60-62 400 e.p. gasoline....	8.9500	9.2500	9.6250
64-66 375 e.p. gasoline....	10.4500	10.4167	10.7031

All above weighted average prices are effective on Monday on the dates shown at the top of the columns.

The above weighted average prices reflect the action the past week of several of the major Oklahoma refiners in reducing their quotations more nearly in line with quotations sent out from areas adjacent to Group 3 proper. These reductions in some instances were as much as 0.50-cent a gallon.

Only two refiners in Oklahoma at the close of the week were selling 58-60 U. S. Motor at more than 8.50 cents a gallon. A large majority of refiners reporting daily sales to this publication and Platt's Oilgram were moving their gasoline at a price range of 8.25 to 8.50 cents, while two or three reporting plants had accepted odd lot business at 8 cents. There were two or three non-reporting plants whose price range also was 8 to 8.50 cents, but the inclusion of their sales probably would have had little effect on the above averages.

Inclement weather in much of the Middle West cut down spot buying to a certain extent during the week. Contract shipments were at a fairly good level.

(The above weighted averages are made up from confidential daily reports of all gasoline spot market sales—for shipment in 10 days—from Oklahoma refineries only and representing 85.2 per cent of the state's refining capacity. The above prices do not include prices on sales for "over the month," for contracts, or to brokers or on shipments to company owned stations. Records of the reporting refiners are checked periodically to verify the accuracy of their reports.—Editor.)

	Prices Dec. 17	Prices Dec. 10	Prices Dec. 3
OKLAHOMA			
48-50 450 e.p. naphtha...	†8.00	†8.00	†8.25 – 8.50
50-52 450 e.p. naphtha...	†8.00	†8.00	†8.25 – 8.50
56-58 450 e.p. gasoline....	8.25 – 8.75	8.25 – 8.75	8.50 – 9.00
58-60 450 e.p. gasoline....	8.50 – 8.875	8.50 – 8.875	8.625– 9.125
64-66 390 e.p. gasoline....	9.375– 9.625	9.875–10.125	10.00 –10.375
68-70 350-360 e.p. gasoline	10.50 –10.75	10.50 –10.75	10.75
PENNSYLVANIA			
52-54 Naphtha.....	9.50 –10.375	9.25 –10.25	9.25 –10.50
54-56 Naphtha.....	9.50 –10.375	9.25 –10.25	9.25 –10.50
58-60 U.S. Motor 437 e.p.	10.50 –10.75	10.50 –10.75	10.50 –11.00
60-62 400-410 e.p. gasoline	10.875–11.50	11.00 –11.75	11.50 –12.00
64-66 390 e.p. gasoline....	12.00 –12.50	12.00 –12.50	12.25 –13.00
68-70 Str-run gas. 350-360 e.p.....	13.00 –13.50	12.75 –13.75	12.75 –13.50
OHIO (Quotations of S. O. Ohio)			
58-60 U.S. Motor, delivered in Ohio, 3c tax to be added	11.75	11.75	11.75
KANSAS (F. O. B. refinery Kansas destination)			
58-60 U.S. Motor 437 e.p.	8.75	9.00	9.25 – 9.50
60-62 400 e.p. gasoline....	9.50	9.75	10.25
64-66 375 e.p. gasoline....	10.25	10.50 –10.75	10.75 –11.00
NORTH TEXAS			
48-52 450 e.p. naphtha...	†7.50	†7.75	†7.75 – 8.00
56-58 450 e.p. gasoline....	†7.50 – 7.75	†7.75	†8.00
58-60 450 e.p. gasoline....	†7.50 – 7.75	†7.75	†8.00
58-60 U.S. Motor 437 e.p.	7.75 – 8.00	8.25 – 8.50	8.25 – 8.75
60-62 400 e.p. gasoline....	9.00 – 9.25	9.25	9.25 – 9.50
64-66 390 e.p. gasoline....	9.25 – 9.50	9.50	9.75
64-66 375 e.p. gasoline....	9.50 – 9.75	9.75	10.00
68-70 350-360 e.p. gasoline	10.00 –10.25	10.00 –10.25	10.75
NORTH LOUISIANA (N. La., Ark. and Miss. destination)			
58-60 U.S. Motor gasoline	8.75	9.00	9.00 – 9.25
ARKANSAS (Arkansas destination only)			
56-58 450 e.p. gasoline....	8.50	8.50	8.50 – 8.75
58-60 450 e.p. gasoline....	8.50	8.50	9.00
58-60 U.S. Motor 437 e.p.	8.75	8.75 – 9.00	9.00 – 9.25
‡CALIFORNIA			
54-58 U.S. Motor 437 e.p.	9.00 –12.50	9.00 –12.50	9.00 –12.50
‡‡58-61 375-400 e.p. gasoline	10.00 –13.50	10.00 –13.50	10.00 –13.50
42-45 Eng. dis. 445-480 e.p.....	7.00 – 8.00	7.00 – 8.00	7.00 – 8.00

‡3c tax to be added to California gasoline prices if used in state.
‡‡Gravity changed from 437 e.p. to 375-400 e.p. Dec. 17.

NATURAL GASOLINE

(Note: End point of all grades, not over 375 F. Corrosion test adopted Oct. 1, 1927; A.S.T.M Method D130-27T; doctor test, July 2, 1928.)

OKLAHOMA			
Grade AA, 80-87.9, 90% Recovery.....	7.75 – 8.00	8.375– 8.50	8.875– 9.125
Grade A, 72-79.9, 90% Recovery.....	8.625– 8.75	9.00	8.875– 9.125
Grade BB, 84-92, 85% Recovery.....	6.50 – 6.75	7.25 – 7.50	8.50
Grade B, 76-83.9, 85% Recovery.....	7.25 – 7.50	7.75 – 8.00	8.50
Grade C, 80-92, 78% Recovery.....	6.50	7.00 – 7.25	8.50
NORTH TEXAS (F. O. B Breckenridge)			
Grade AA, 80-87.9, 90% Recovery.....	7.75 – 8.00	8.375– 8.50	8.875– 9.125
Grade A, 72-79.9, 90% Recovery.....	8.625– 8.75	9.00	8.875– 9.125
Grade BB, 84-92, 85% Recovery.....	6.50 – 6.75	7.25 – 7.50	8.50
Grade B, 76-83.9, 85% Recovery.....	7.25 – 7.50	7.75 – 8.00	8.50
Grade C, 80-92, 78% Recovery.....	6.50	7.00 – 7.25	8.50
NORTH LOUISIANA (F. O. B. Monroe District)			
Grade AA.....	†8.25 – 8.50	†8.75	†9.25 – 9.50
Grade BB.....	†7.50	†7.75 – 8.00	†9.00
Grade C.....	†7.50	†7.50 – 7.75	†9.00
CALIFORNIA			
75-85, 375-390 e.p. blend	7.50 – 8.25	7.25 – 7.75	7.25 – 7.50

MOTOR FUEL BLENDS

OKLAHOMA			
64-66 Blend 437 e.p.....	8.00 – 8.25	8.25 – 8.50	8.75

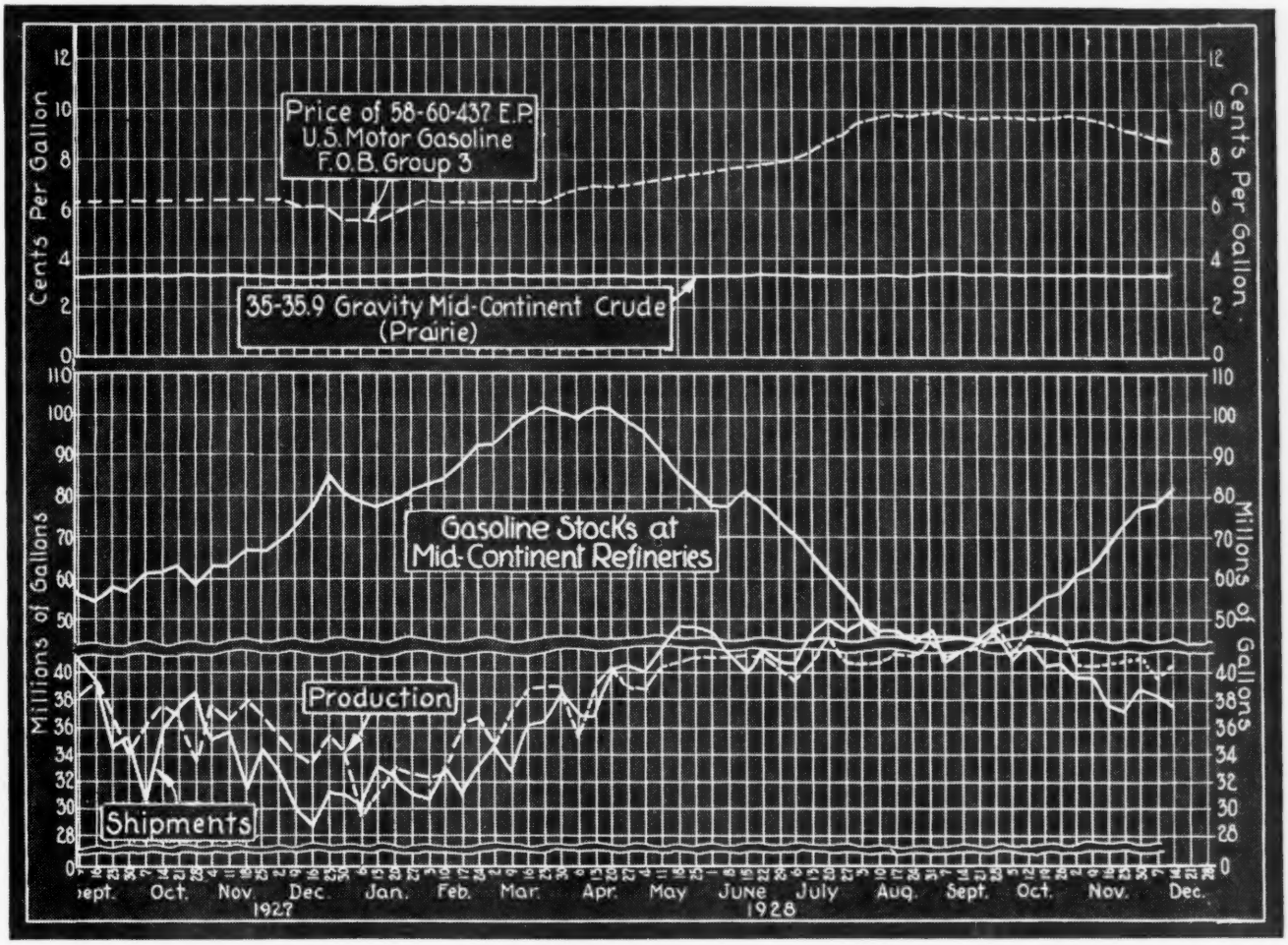
BURNING OILS

PENNSYLVANIA			
45 w.w. kerosene.....	7.25 – 7.75	7.25 – 7.625	7.25 – 7.625
46 w.w. kerosene.....	7.625– 8.25	7.625– 8.00	7.625– 8.00
47 w.w. kerosene.....	7.75 – 8.75	7.75 – 8.25	8.00 – 8.25
300 mineral seal.....	7.25 – 7.75	7.25 – 7.75	7.25 – 7.75
OKLAHOMA			
41-43 w.w. kerosene.....	5.50 – 5.75	5.625– 5.75	5.75
42-44 w.w. kerosene.....	6.25	6.25	6.25
KANSAS (F. O. B. refinery Kansas destination)			
41-43 w.w. kerosene.....	5.75 – 6.00	6.00	6.00 – 6.25
42-44 w.w. kerosene.....	6.25 – 6.50	6.25 – 6.50	6.50
NORTH TEXAS			
40-42 w.w. kerosene.....	5.375– 5.50	5.50	5.50
41-43 w.w. kerosene.....	5.625– 5.75	5.75	5.75
NORTH LOUISIANA (N. La., Ark. and Miss. destination)			
41-43 w.w. kerosene.....	6.50	6.75	6.75
ARKANSAS (Arkansas destination only)			
42-44 kerosene.....	6.75	6.75 – 7.00	6.75 – 7.00
CALIFORNIA			
38-40 w.w. kerosene.....	6.50 – 7.00	6.25 – 7.00	6.25 – 7.00

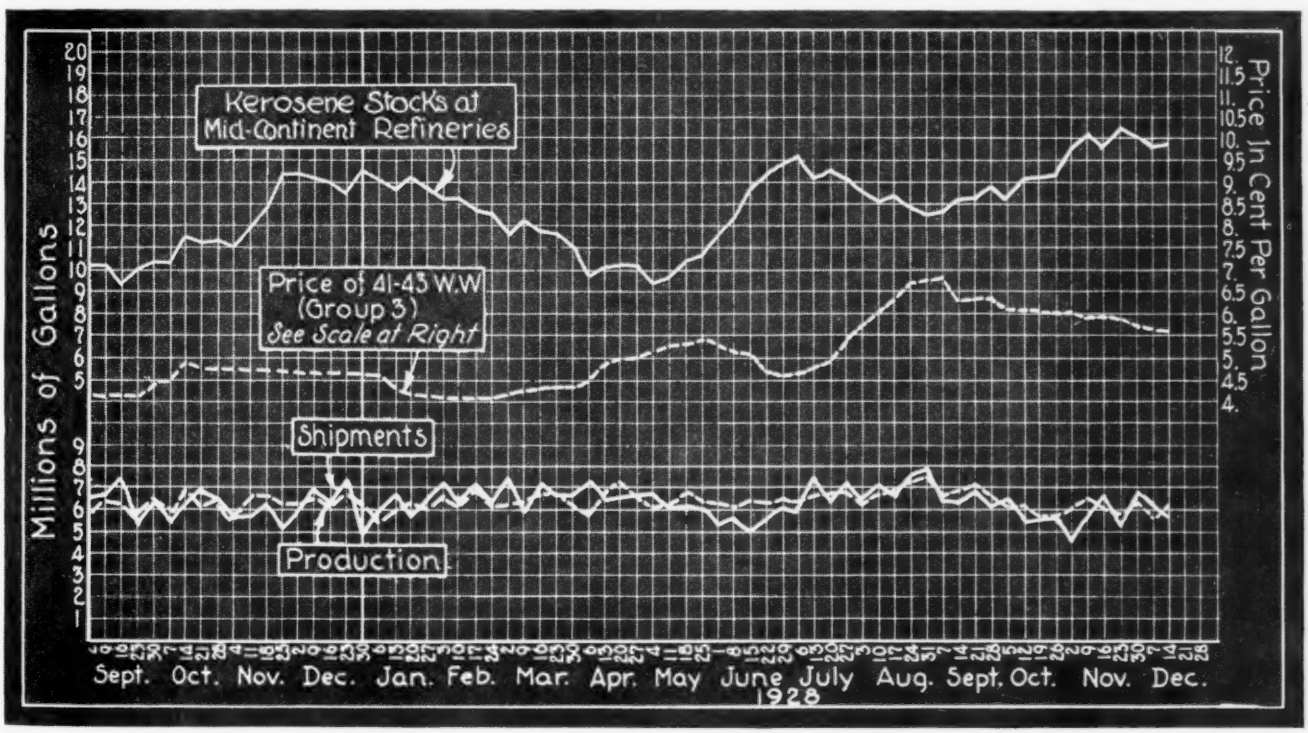
†Prices nominal ††Only one refiner quoting *Quotations only **Represents both sales and quotations

Barometer of Mid-Continent Refinery Market—Week Ending December 14

Charted Course of Prices, Production, Shipments, Stocks of Principal Refined Products, Week by Week, From Reports Made by 81 Plants to National Petroleum News


Price of 58-60-43? E.P. U.S. Motor Gasoline F.O.B. Group 3
35-35.9 Gravity Mid-Continent Crude (Prairie)
Cents Per Gallon
Gasoline Stocks at Mid-Continent Refineries
Production
Shipments
Millions of Gallons
Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.
1927
1928

Prices shown above are extended to date shown in Refinery Market and Crude tables in Market section of this issue and stocks, shipments and production are extended to date as shown in the table on page 108


Kerosene Stocks at Mid-Continent Refineries
Price of 41-43 W.W. (Group 3) See Scale at Right
Shipments
Production
Millions of Gallons
Price In Cent Per Gallon
Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.
1928

Refinery Markets on Wax, Lubricants and Heavy Oil Products

Prices given below are in cents per gallon, F. O. B. refinery, except where $ is shown

(For quick reference to Refinery Prices, get the OIL PRICE HANDBOOK, published annually)

NEUTRAL OIL

PENNSYLVANIA	Prices Dec. 17	Prices Dec. 10	Prices Dec. 3
Vis.		**(Viscosity at 70°F.)**	
200 No. 3 Assoc. Filt.	28.00 –29.00	28.00 –29.00	28.00 –29.00
180 No. 3 Assoc. Filt.	26.50 –27.00	25.00 –27.00	24.00 –27.00
150 No. 3 Assoc. Filt.	22.50 –23.00	21.00 –25.50	22.50 –23.00
		(Non Viscous)	
34 Grav. 330-340 Flash	8.00 – 9.00	7.25 – 9.00	7.25 – 9.00
36 Min. Neut., 300-305 Flash	‡7.75	7.00 – 8.00	7.50 – 8.00

‡One seller quoting.

****OKLAHOMA**

Vis. Color		(Viscosity at 100°F.)	
100—No. 2	5.50 – 6.00	5.50 – 6.00	5.50 – 6.50
150—No. 3	7.50 – 8.50	7.50 – 8.50	7.50 – 8.50
150—No. 4	6.50 – 7.50	6.50 – 7.50	6.50 – 7.50
180—No. 3	8.75 – 9.50	8.75 – 9.50	8.50 – 9.50
180—No. 4	8.75 – 9.75	8.75 – 9.75	8.75 – 9.75
180—No. 5	8.50 – 9.50	8.50 – 9.50	8.50 – 9.50
200—No. 3	9.50 –10.00	9.50 –10.00	9.00 –10.00
200—No. 4	9.25 –10.00	9.25 –10.00	9.25 –10.00
200—No. 5	8.50 – 9.00	8.50 – 9.00	8.50 – 9.50
220—No. 3	12.50 –13.50	12.50 –13.50	12.50 –13.50
220—No. 4	12.25 –12.50	12.25 –12.50	12.25 –12.50
220—No. 5	11.50 –12.00	11.50 –12.00	11.50 –12.00
240—No. 3	13.00 –13.50	13.00 –13.50	13.00 –13.50
240—No. 4	12.00 –13.00	12.00 –13.00	12.00 –13.00
240—No. 5	11.00 –13.00	11.00 –13.00	11.00 –13.00
280—No. 3	14.00 –15.50	14.00 –15.50	14.00 –15.50
280—No. 4	13.00 –14.00	13.00 –14.00	13.00 –14.50
280—No. 5	12.00 –13.00	12.00 –13.00	12.00 –14.00
300—No. 5-6	15.00 –17.00	15.00 –17.00	15.00 –17.00

GULF COASTAL

Vis. Color		(Viscosity at 100°F., pour test 0)	
100—No. 2 Unfilt. Pale	7.00 – 7.50	7.00 – 7.50	7.00 – 7.50
200—No. 3 Unfilt. Pale	10.00 –10.75	10.00 –10.75	10.00 –10.75
300—No. 3 Unfilt. Pale	11.00 –11.75	11.00 –11.75	11.00 –11.75
500—No. 3½ Unfilt. Pale	12.50 –13.50	12.50 –13.50	12.50 –13.50
750—No. 4 Unfilt. Pale	15.50 –16.00	15.50 –16.00	15.50 –16.00
200—No. 5½ Red Oil	8.50 – 9.00	8.50 – 9.00	8.50 – 9.00
300—No. 5½ Red Oil	9.25 – 9.75	9.25 – 9.75	9.25 – 9.75
500—No. 6 Red Oil	10.50 –11.25	10.50 –11.25	10.50 –11.25
750—No. 6 Red Oil	13.50 –14.00	13.50 –14.00	13.50 –14.00

CALIFORNIA

Vis. Color		(Viscosity at 100°F.)	
100—No. 3	9.50 –10.00	9.50 –10.00	9.50 –10.00
200—No. 3	11.50	11.50	11.50
300—No. 3	13.00	13.00	13.00
450—No. 3	15.50	15.50	15.50
550—No. 3	16.50	16.50	16.50
600—No. 3	17.00	17.00	17.00
200—No. 5	11.00	11.00	11.00
300—No. 5	12.00	12.00	12.00
400—No. 5	14.00	14.00	14.00
500—No. 5	15.00	15.00	15.00
600—No. 5	16.00	16.00	16.00
700—No. 7	18.00	18.00	18.00

CYLINDER STOCKS

****OKLAHOMA**

190-200 Vis. at 210° Brt. St.	31.00 –32.00	31.00 –32.00	31.00 –32.00
150-160 Vis. at 210° Brt. St.	27.00 –28.00	27.00 –28.00	27.00
600 E. St. 140-150 Vis.-210°	17.50 –18.00	17.50 –18.00	17.50 –18.00
600 St. Ref. Olive Green	7.50 –10.00	7.50 –10.00	7.50 –10.00
600 St. Ref. Dark Green	6.00 – 8.00	6.00 – 8.00	6.00 – 8.00
Black Oil	5.00	5.00	5.00

PENNSYLVANIA (1-inch Immersion Test)

600 Steam Refined	21.00 –22.00	20.00 –21.00	18.00 –19.00
650 Steam Refined	25.00 –25.50	24.00 –25.00	22.00 –23.00
600 Flash	28.00 –28.50	27.00 –27.50	25.00
625 Flash	39.00 –40.00	34.00 –39.00	32.00 –39.00
600 Warren E.	‡25.00	21.50 –24.00	20.00 –21.50
600 Oil City E.	‡‡22.00–24.00	19.00 –23.00	19.00 –20.50
600 D Filtered	‡30.00	25.50 –28.00	25.50 –26.00
Cold Test Stock, 40-50p. p., 140-150 vis. at 210° 540-550 flash, No. 8 color	36.00 –37.00	36.00 –37.00	35.50 –37.00
40-50 p.p., 140-150 vis. at 210°, 540-550 flash, No. 6-6½ color diluted	34.00 –36.00	34.00 –35.00	33.50 –35.00

‡One seller quoting.
‡‡Two sellers quoting.

WAX

PENNSYLVANIA Per pound, New York	Prices Dec. 17	Prices Dec. 10	Prices Dec. 3
122-124 white crude scale	5.125– 5.25	5.125– 5.25	5.125– 5.25
124-126 white crude scale	5.25 – 5.375	5.25 – 5.375	5.25 – 5.375
OKLAHOMA			
**124-126 White Crude Scale	4.875– 5.125	4.75 – 4.875	4.75 – 4.875
CALIFORNIA			
White crude scale, per pound, ton lots	6.00 – 6.50	6.00 – 6.50	6.00 – 6.50

FUEL OIL

PENNSYLVANIA (For outside Pittsburgh district)			
36-40 fuel oil	4.75 – 5.25	4.75 – 5.00	4.75 – 5.00
30-34 fuel oil	4.50 – 4.625	4.50 – 4.75	4.50 – 4.75
28-32 fuel oil	4.50 – 4.625	4.50 – 4.75	4.50 – 4.75
OKLAHOMA			
38-40 straw distillate	3.50 – 3.625	3.375– 3.50	3.375– 3.50
36-38 straw distillate	3.375– 3.50	3.25 – 3.375	3.25 – 3.375
32-36 gas oil, straw	‡2.75 – 3.00	‡2.625– 2.875	‡2.625– 2.875
32-36 dark gas oil	‡2.50 – 2.875	‡2.50 – 2.75	‡2.50 – 2.75
28-30 fuel oil (in bbls.)	$0.85 – 0.90	$0.85 –$0.90	$0.85 – 0.90
26-28 fuel oil (in bbls.)	$0.675– 0.725	$0.675– 0.725	$0.675– 0.725
24-26 fuel oil (in bbls.)	$0.625– 0.675	$0.625– 0.675	$0.625– 0.675
22-26 fuel oil (in bbls.)	$0.55 – 0.625	$0.55 – 0.625	$0.55 – 0.625
18-22 fuel oil (in bbls.)	$0.55 – 0.60	$0.55 – 0.60	$0.55 – 0.60
16-18 fuel oil (in bbls.)	$0.55	$0.55	$0.55
14-16 fuel oil (in bbls.)	$0.525– 0.55	$0.525– 0.55	$0.525– 0.55

‡Zero cold test gas oil sells for 0.125 to 0.25 cent higher.

KANSAS (F. O. B. refinery Kansas destination)

38-40 straw distillate	3.625– 3.75	3.50 – 3.625	3.50 – 3.625
36-38 straw distillate	3.25 – 3.50	3.25 – 3.375	3.25 – 3.375
32-36 gas oil	2.75 – 3.00	2.75 – 2.875	2.75 – 2.875
24-26 fuel oil	*$0.75 – 0.80	*$0.75 – 0.80	*$0.75 – 0.80
18-22 fuel oil	*$0.70	*$0.70	*$0.70

NORTH TEXAS

38-40 straw distillate	3.25 – 3.375	3.25 – 3.375	3.25 – 3.375
32-36 gas oil, cracked	2.375– 2.50	2.375– 2.50	2.375– 2.50
32-36 St. reduced gas oil	2.375– 2.50	2.375– 2.50	2.375– 2.50
24-26 fuel oil (in bbls.)	$0.525– 0.55	$0.525– 0.55	$0.525– 0.55

GULF COASTAL

Fuel (in bbls.)	$1.20 –$1.25	$1.20 –$1.25	$1.20 –$1.25
Gas oil	4.375– 4.50	4.375– 4.50	4.375– 4.50

NORTH LOUISIANA (N. La., Ark. and Miss. destination)

32-36 gas oil, dark	3.00	3.00	3.00
32-36 gas oil, straw	3.00 – 3.25	3.00 – 3.25	3.00 – 3.25
16-20 fuel oil (in bbls.)	$0.70	$0.70	$0.70

ARKANSAS (Arkansas destination only)

32-36 gas oil, straw	3.00 – 3.25	3.00 – 3.25	3.00 – 3.25
32-36 gas oil	3.00	3.00	3.00
28-32 gas oil	2.75	2.75	2.75

CALIFORNIA (F. O. B. San Joaquin Valley. At San Francisco, 4c per bbl. more)

14-18 fuel oil (per bbl.)	$0.60 –$0.70	$0.60 –$0.70	$0.60 –$0.70
14-18 Bunker oil (per bbl.)	$0.70 –$1.00	$0.70 –$1.00	$0.70 –$1.00
30-34 gas oil (per bbl.)	$1.00 –$1.15	$1.00 –$1.15	$1.00 –$1.15
27 Plus Diesel oil (per bbl.)	$0.90 –$1.00	$0.90 –$1.00	$0.90 –$1.00

PETROLATUMS

PENNSYLVANIA (In barrels, carload lots, f. o. b. refinery. In tank cars ½c to ¾c per pound less.) Two refiners quoting.

Snow White	8.50 – 8.625	8.50 – 8.625	8.50 – 8.625
Lily White	7.625	7.625	7.625
Cream White	6.625	6.625	6.625
Light Amber	3.625– 3.875	3.625– 3.875	3.625– 3.875
Amber	3.375– 3.50	3.375– 3.50	3.375– 3.50
Red	3.125– 3.25	3.125– 3.25	3.125– 3.25

PETROLEUM COKE

****OKLAHOMA**

(Per ton in car lots)

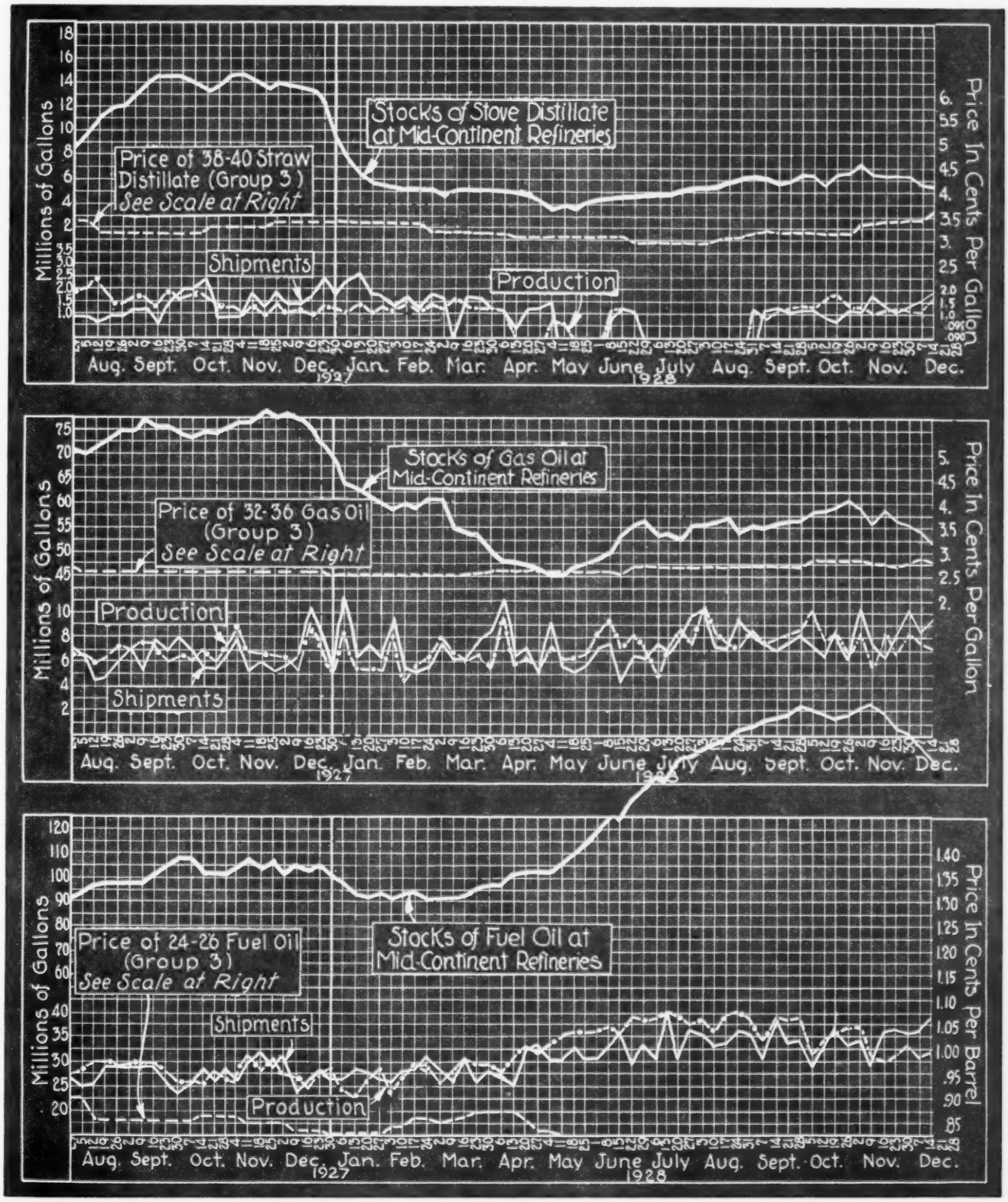
Lump	$4.50 – 5.00	$4.50 – 5.00	$4.50 – 5.00
Still run	$3.00	$3.00	$3.00
Breeze	$2.00	$2.00	$2.00

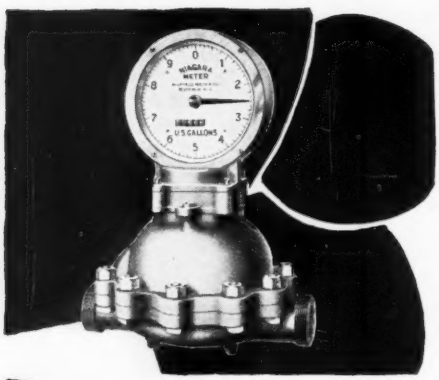
†Prices Nominal ††Only One Refiner Quoting *Quotations only **Represents Both Sales and Quotations

Barometer of Mid-Continent Refinery Market

Week Ending December 14

Charted Course of Prices, Production, Shipments, Stocks of Principal Refined Products, Week by Week, From Reports Made by 81 Plants to National Petroleum News


Millions of Gallons
Price In Cents Per Gallon
Stocks of Stove Distillate at Mid-Continent Refineries
Price of 38-40 Straw Distillate (Group 3) See Scale at Right
Shipments
Production
Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.
1927
1928
Millions of Gallons
Price In Cents Per Gallon
Stocks of Gas Oil at Mid-Continent Refineries
Price of 32-36 Gas Oil (Group 3) See Scale at Right
Production
Shipments
Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.
1927
1928
Millions of Gallons
Price In Cents Per Barrel
Price of 24-26 Fuel Oil (Group 3) See Scale at Right
Stocks of Fuel Oil at Mid-Continent Refineries
Shipments
Production
Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.
1927
1928



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PITTSBURGH, PA.

District Sales Offices
New York, Boston, Philadelphia, Louisville, Houston, New Orleans, Atlanta, Tampa

REFINERS OF OKLAHOMA, TEXAS AND LOUISIANA

PETROLEUM

Refined Oil, Naphtha, Paraffine Wax
Gasoline, Gas Oils, Petroleum Coke

FUEL OILS

LUBRICATING OILS

Cylinder Engine Cordage

RED AND PALE PARAFFINE OILS

California Market

Motor Gasoline Weaker

LOS ANGELES, Dec. 15.—Natural gasoline continues to be the strongest petroleum product in California. A large per cent of the total production is being taken by major companies under long time contracts netting the manufacturer 7 to 7.50 cents, thus leaving little to be sold in the spot market.

One or two small sales were made very recently at slightly better than 8 cents and it is very probable that quotations within the next two weeks will have to be marked up to around 8.50 cents if not more. There is a possibility that the increased production of natural gasoline from Santa Fe Springs in the next 60 days might weaken the spot market, although most of this expected production has already been contracted for.

Two cargoes of natural gasoline have already been shipped so far this month and a third cargo is due to go out next week. To make it possible to ship this product, it is necessary to add at least 25 per cent U. S. motor, or some similar product, to bring the vapor pressure to a safe point. At least three cargoes of natural gasoline left Los Angeles Harbor in November.

The export market for U. S. motor gasoline is slow with no change in quotations. It is reported that two major companies are sold up three months ahead and there is only one company with a supply of this product on hand to take care of orders. Easing off of prices on the east coast has been very unwelcome news to California refiners.

Gasoline in tank cars is also slightly weaker, both for movement to points outside the state and within the state. A few cars have moved to points outside at slightly under 9 cents, although most refiners are holding to the old quotations of 9 to 9.50 cents. Refiners are asking 10.50 to 12.50 cents without tax for gasoline in tank cars to move within the state, but during the past week a few cars have moved around 10 cents.

In northern California there are quite a few independent service stations selling motor fuel at 18.50 cents against a posted price of 21 cents. In southern California a number of service stations are selling gasoline at six gallons for a dollar and a few at seven gallons for $1.15 against a posted price of 20.50 cents.

There is more spot light refinable crude on the market. One independent refiner recently signed a contract for 2000 barrels a day until the first of January at a reported premium of 25 cents a barrel. One small lot of light crude was offered in the market for spot sale at 15 cents a barrel premium. It is likely that there will be more spot crude for sale the next 60 days on account of the flush production expected at Santa Fe Springs.

Kerosene is a little stronger but very few refiners care for this business.

Pennsylvania Market

Cylinder Stocks Up 1 Cent

CLEVELAND, Dec. 17.—Price ranges in the western Pennsylvania market late last week were unchanged generally. Some refiners Dec. 17 advanced price on cylinder stocks and petrolatums following the sixth crude oil advance of the year Dec. 14.

Cylinder stocks remained scarce and considerable shopping was necessary to find goods on the spot market. The 600 steam refined was quoted at 21 to 22 cents Dec. 17, an advance of 1 cent over a week ago. Other cylinder stock quotations were up also over a week ago.

Light bright stock has advanced with some manufacturers to 37 cents. Some refiners were quoting 36 cents for light bright and 34 cents for dark. Many of the larger manufacturers are out of the market for a few weeks. Several refiners report that the 2-cent spread between light and dark bright stocks which has prevailed during the year, is narrowing to 1 cent.

The consensus among western Pennsylvania refiners was that cylinder and bright stocks and neutrals would have to bear the brunt of the recent crude oil advances.

U. S. Motor gasoline was 10.50 to 10.75 cents. The 60-62, 400-410 e.p. gasoline was quoted down to 10.875 cents today. Other higher gravity gasolines were unchanged in price. Some refiners reported better demand for the higher gravity gasolines than for U. S. Motor. Refiners generally reported demand for gasoline has declined over the week.

Kerosene continued to be in fair demand. Quotations were unchanged, although many refiners have advanced their prices to 7.375 and 7.50 cents for 45 water white. Fuel oil neutrals and wax prices were unchanged.

LOS ANGELES, Dec. 14.—The total throughput capacity of the new Norwalk Co. natural gasoline plant at Santa Fe Springs is to be increased to better than 50,000,000 cubic feet per day through the addition of a seven-foot J. A. Campbell oil froth absorber. It is to be placed within the next two weeks. The same company is also adding a Campbell absorber of similar capacity to its old plant at Santa Fe Springs.

Some of the
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of
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Type GY

Type X-I

Type NJ

GREAT IMPROVEMENTS HAVE RECENTLY BEEN MADE IN SHEPARD STATIONS, among them being the furnishing of complete roof decks in sections, inside lining in sections and all trim in sections—thus greatly simplifying and reducing time of completion of erection.

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11 BROADWAY NEW YORK CITY
SHOPS · IRVINGTON, NEWARK N.J.

Gulf Export Market

Gasoline Price Fall Casts Gloom

Staff Special
NEW YORK, Dec. 15

REDUCTIONS of 0.25 to 0.375-cent in gasoline prices at the Gulf coming near the end of an unusually dull and uneventful week, cast a heavier gloom over the New York export trade Dec. 15.

Buying from abroad has been lagging far behind the volume usual at this season and most suppliers had been anticipating minor price recessions when the spell of inactivity was broken. A fall of 0.375-cent under the last price paid, as in the instance of U. S. Motor gasoline this week, took the trade wholly by surprise, and as business closed Dec. 15 there was a great deal of conjecturing as to the outlook for the market in the immediate future.

France, of course, is the largest outlet for open market goods, and as one important supplier said Dec. 15, "The Frenchman has an almost uncanny ability to foretell the future trend of a market. He naturally is looking for lower prices now. If he continues his policy of watchful waiting much longer, however, he may wake up suddenly and find the situation in the United States has changed. It's not long now before U. S. suppliers will begin building up their stocks for 1929 domestic consumption and with foreign purchases in November and December far below normal, chances are there will be much less gasoline offered for export in January than there is right now."

If there was any consoling element in the current market, several other suppliers agreed that possibly the foregoing was it, and one which might prevent further price recessions.

At the same time there were contrary opinions expressed and conditions surrounding the transaction closed Friday possibly will serve best to elucidate the positions of still other suppliers.

The cargo purchased by a small French buyer consisted of approximately 50,000 barrels of U. S. Motor and 64-66, 375 end point gasoline, one-fourth of the former and three-fourths of the latter grade. Six suppliers reported quoting on the business when the inquiry first was circulated through the market. Competition, however, narrowed down to four. One of the four quoted 8.875 cents and 10.75 cents, respectively; another quoted 8.75 cents and 10.75 cents, respectively; a third quoted 8.75 cents and 10.6875 cents and got the business. The fourth supplier counter-offered 8.75 cents and 10.625 cents, respectively, but an hour or so after the business had been closed. The cargo is for Jan. 10-31 loading.

Another small French buyer entered the market about the middle of the week for a 50,000-barrel cargo of the same two grades: one-sixth U. S. Motor and five-sixths 64-66, 375 end point gasoline, for second half of February loading. He announced Saturday, however, that he would postpone buying indefinitely.

There were no inquiries, foreign or domestic, for kerosene for shipment from the Gulf the past week, but prices held relatively firm at 6.75 cents for prime white and 7.75 cents for water white.

An inquiry for a cargo of dark gas oil was reported in the market Tuesday but up to the close of business Saturday the buyer said he had been unsuccessful in securing a price that was sufficiently attractive. Most suppliers were quoting a minimum of 3.75 cents for translucent gas oil. The aforementioned buyer said he was unable to better this price for dark goods.

The bulk market for fuel oil was a shade firmer. Buyers reported $0.68 a barrel was the best quotation they could get this week for bunker C in cargo lots. Bunkers sold at $0.875 a barrel in the New Orleans district Dec. 10, 7.5 cents under the last paid price.

A cargo of heavy Panuco crude was offered at $0.88 a barrel, f.o.b. Tampico, in New York Saturday.

New York Domestic Market

Spot Gasoline Is Quiet

Staff Special
NEW YORK, Dec. 15

EXCEPT for isolated instances of minor price recessions, eastern gasoline markets were generally quiet and featureless the second week of December. Spot demand was negligible, but movement under contract was fairly steady. Jobbers ordering out contract goods, however, were said to be keeping their purchases at a minimum, showing little or no tendency to break away from their day-to-day buying policy.

The most significant event of the last week, if such importance can be attached to it, was the lowering of prices by two major sellers in the Philadelphia district to meet Mid-Continent competition. Gasoline from north Texas, particularly, has been working its way in considerable volume into Pittsburgh and other western Pennsylvania points at 0.5 to 0.75-cent under delivered prices made from the seaboard.

In the past, jobbers in the Pittsburgh district have been willing to pay a slight premium for seaboard gasoline largely for the reason that in most instances they have been getting California goods. But with the narrowing down of margins they have been quick to take advantage of the exceptionally low priced stuff from the Mid-Continent. At least two important companies in the Philadelphia market have depended upon western Pennsylvania as an outlet for a considerable portion of their goods, and to meet the competition they reduced their prices 0.25-cent to 10.75 cents early this week. One of them asserted it was prepared to go 10.50 cents if 10.75 cents didn't bring back some of the customers it had lost in the past six weeks.

The two companies continued to quote 11 cents f.o.b. shipping point on spot business for nearby delivery.

Possibly the reluctance to reduce prices by several companies handling California gasoline has been due to the fact that there has been temporary shortage of this grade on the east coast. At least two boats have arrived in the last 10 days, and the market for this commodity is not now nearly so tight.

There were a good many reports of substantially lower prices being quoted for U. S. Motor gasoline at various points along the Atlantic coast. In running down the reports, nine times out of ten the goods involved were found to be under contract but were represented as having been purchased in the open market.

The New York harbor market was the only one where there was any price shading going on openly. Several small sellers continued to report selling occasional lots of U. S. Motor gasoline at 10.75 cents, but the total of their transactions was comparatively small. The market for California gasoline at New York harbor, however, was firm at 11 cents. Sellers of U. S. Motor at 10.75 cents reported

they were unable to offer California at less than 11.

The Baltimore market for both U. S. Motor and California grade was relatively tight. One large seller in this market, who also ships a fair volume of goods into western Pennsylvania, reported he was short of goods at present. His next shipment from the west coast is not due at Baltimore until late this month.

Spot prices at points further south on the seaboard and also in the New England district were unchanged. Goods under contract were moving at 0.75 to 1 cent under the prices quoted in the open market for spot shipment.

Kerosene demand was steady and there was a better call for the lighter grades of domestic burning oil. Prices of the latter showed a tendency to move forward under the demand stimulated by brisker weather, but generally speaking price ranges for the general run of spot market business were unchanged.

Fredericks Sales Director For Pierce Petroleum

TULSA, Dec. 15.—Charles C. Fredericks, formerly with S. F. Bowser & Co., has been named director of sales for the Pierce Petroleum Corp., with headquarters in St. Louis, according to an announcement by E. D. Levy, president. Mr. Fredericks' appointment was effective Dec. 12.

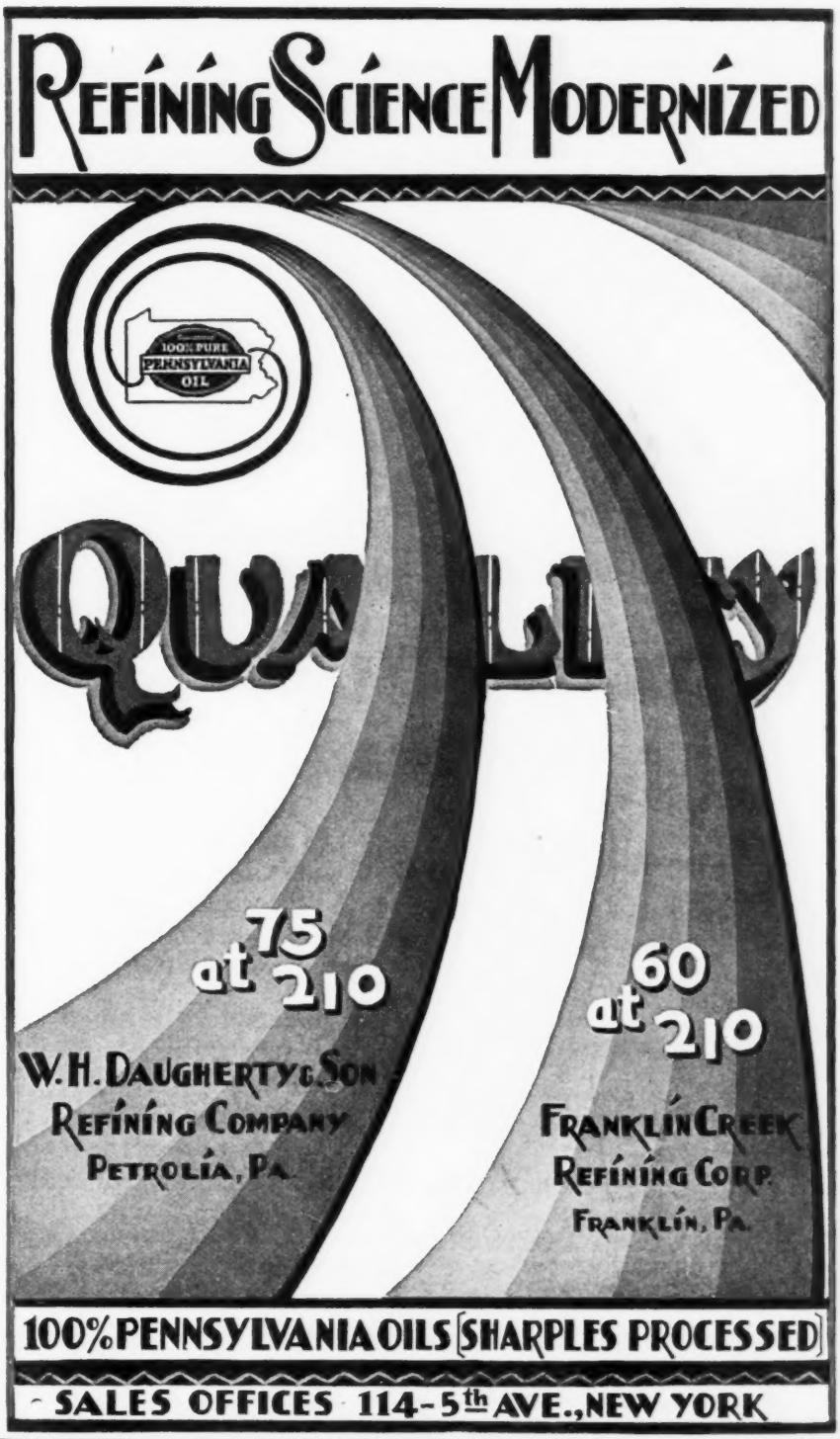
H. L. Deming, who was manager of sales, will resume his duties as assistant to the president. The office of manager of sales was abolished.

W. G. O'Fallon, H. S. Turner, C. L. Ackert and J. R. Arrington were appointed directors of sales.

J. R. Arrington is in charge of the Tulsa office and has been handling much of the refinery output. After Jan. 1 he will be the Mid-Continent buyer for the corporation, and his activities will make him one of the largest if not the largest buyer of gasoline and kerosene in the Mid-Continent. He will buy gasolines for the corporation's stations in Louisiana, Arkansas, Texas and Oklahoma.

NEW YORK, Dec. 14.—R. W. Turner, assistant to the export sales export manager of the Atlantic Refining Co. has been appointed assistant to the manager of the company's Antwerp office. Mr. Turner replaces S. M. Neall, who is to return to this country. He will leave for Europe the latter part of February.

HUDSON, Wis.—Albert J. Burke has just completed a filling station here which will be operated as Burke's Texaco filling station.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60 at 210
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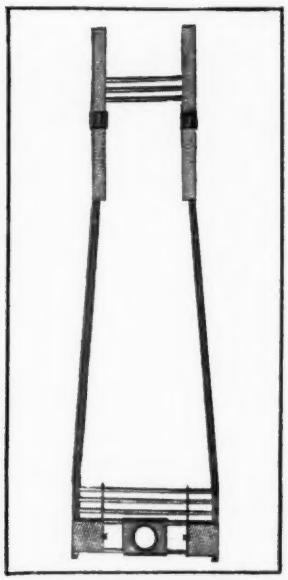
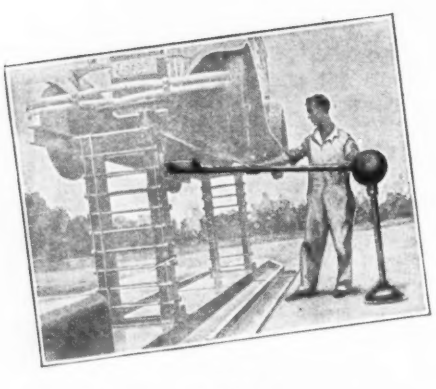


RIGID 4-POINT SUSPENSION *with the Improved Lifting Cradle*



Holmes Oil Receiver

The Holmes Oil Receiver automatically disposes of crank case drainings and promotes greater speed, cleanliness and safety in crank case service. This Receiver, used in connection with any modern lift, permits the draining of crankcases without spilling a drop of oil.

The Receiver is simple in construction, consisting of an intermediate reservoir to which a metal draining tube with an aluminum funnel is fitted. The draining tube is telescopic and swings in an arc on both a vertical and horizontal plane, permitting instant adjustment to the crankcase drain plug. Oil flows by gravity through the drain tube into the sphere or primary reservoir illustrated above, and thence through a pipe line to a hidden storage drum.

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On cars with underslung rear springs, axles make contact with the new Lifting Cradle of the Holmes Universal Auto Lift at four widely spaced points. As extra assurance of rigidity, each point of contact is provided with a checkered non-skid plate.

On cars not equipped with underslung rear springs, the differential ball rests in a depressed plate, preventing rocking or slipping. By forming the new cradle to the approximate shape of the car frame, all chassis parts are easily accessible. The position of the rear axle permits free access to the differential assembly for drainage, lubrication or repairs.

This is just one of the advantages from scores of features exclusive to Holmes design. Consider some of the others: It is electrically operated—shipped completely assembled and can be installed in 30 minutes without pits or posts. There are no air or plumbing connections, no packing glands or oil reservoirs. You can operate it anywhere—upstairs or down—indoors or out—and should you move, simply load it on a truck and drive away.

Look at the illustrations above. Judge for yourself the new customers this Lift will attract—the minutes it will save on each operation—the dollars it will add to each day's profit. Write today—at once—for complete information.

ERNEST HOLMES COMPANY
CHATTANOOGA TENNESSEE

HOLMES Universal Auto-Lift

Complete Seaboard Market

(Export markets for whole year given in OIL PRICE HANDBOOK. Each volume carries refinery, tank wagon, crude and export markets—complete for the whole year)

Eastern Domestic Market

(Prices for tank car lots, f. o. b. refinery or seaboard terminal, representing majority of quotations.)

U. S. MOTOR GASOLINE	Dec. 17	Dec. 10	Dec. 3
New York harbor	11.00	11.00	11.00
Portland district	*13.25	*13.25	*13.25
Boston district	*12.75	*12.75	*12.75
Providence district	*12.75	*12.75	*12.75
Philadelphia district	†11.00	11.00	11.00
Baltimore district	11.00	11.00	11.00
Norfolk district	11.00 –11.25	11.00 –11.25	11.00 –11.25
Charleston district	11.00 –11.25	11.00 –11.25	11.00 –11.25
Savannah district	11.00	11.00	11.00
Jacksonville district	11.00	11.00	11.00
CALIFORNIA U. S. MOTOR GASOLINE			
New York harbor	11.00	11.00	11.00 –11.25
Philadelphia district	†11.00	11.00	11.00
Baltimore district	11.00	11.00	11.00
WATER WHITE KEROSENE			
New York harbor	9.00	9.00	9.00
Philadelphia district	9.00	9.00	9.00
Baltimore district	9.00	9.00	9.00
GAS OIL: 28-34 Gravity			
New York harbor	4.75 – 5.00	4.75 – 5.00	4.75 – 5.00
Boston district	4.50 – 5.00	4.50 – 5.00	4.50 – 5.00
FURNACE OIL: 36-40 Gravity			
New York harbor	6.50	6.50	6.50
Boston district	6.00 – 6.50	6.00 – 6.50	6.00 – 6.50
GRADE C BUNKER OIL			
New York harbor	$1.05	$1.05	$1.05
Boston district	$1.05	$1.05	$1.05
DIESEL OIL			
New York harbor	$2.00	$2.00	$2.00
MEDICINAL OILS, RUSSIAN			
885-890 s.g., 325-330 vis.	$0.80 – 0.90	$0.80 – 0.90	$0.80 – 0.90
870-875 s.g., 150-155 vis.	$0.67 – 0.77	$0.67 – 0.77	$0.67 – 0.77
860-865 s.g., 80-85 vis.	$0.65 – 0.75	$0.65 – 0.75	$0.65 – 0.75

Note: Above gasoline prices do not include inspection tax levied in some states.

*Minimum delivered.

†Two sellers quote 10.75c for shipment to Pittsburgh and other Western Pennsylvania points.

New York Export Market

(Gasoline and kerosene in cases in bulk. Lubricating oils are per gal. in bbls. Cylinder oils are Penna. products)

	Dec. 17	Dec. 10	Dec. 3
U. S. Motor gasoline	26.40	26.40	26.40
43-45 150 w.w. kerosene	18.90	18.90	18.90
42-44 110 s.w. kerosene	17.65	17.65	17.65
CYLINDER OILS			
Bright stock, dark	41.50 –43.00	41.50 –42.50	41.00 –42.00
600 D filtered	33.50 –35.00	33.50 –35.00	33.00
600 Warren E filtered	29.00 –31.50	29.00 –31.50	27.00 –28.00
600 s.r. unfiltered	28.50 –29.50	26.50 –27.50	25.00 –26.00
650 s.r. unfiltered	32.50 –33.00	29.50 –32.00	29.00 –31.00
600 flash, s.r.	36.00	33.00 –34.50	32.00
630 flash, s.r.	45.00 –47.00	40.00 –43.50	39.00 –43.00
RED ENGINE OILS (Vis. 100°)			
300 vis. No. 6½ color	20.00	20.00	19.50
250 vis. No. 6 color	19.50	19.50	18.50
200 vis. No. 6 color	18.00	18.00	18.00
PALE ENGINE OILS (Vis. 100°)			
230 vis. No. 3¾ color	23.50	23.50	23.50
180 vis. No. 3¼ color	19.00	19.00	19.50
100 vis. No. 2¼ color	16.00	16.00	15.50
MOTOR OILS (Vis. 100°)			
600 vis. No. 7 color	33.00	33.00	34.50
500 vis. No. 6½ color	31.00	31.00	32.50
400 vis. No. 7¼ color	30.00	30.00	30.50
300 vis. No. 6 color	29.00	29.00	29.50
200 vis. No. 6 color	28.00	28.00	*20.00

*This price is for 200 No. 3¼ color.

MEDICINAL OILS			
875-885 s.g.	$0.80	$0.80	$0.80
865-870 s.g.	$0.70	$0.70	$0.70
WAXES (In cents per pound, f.a.s. carload lots)			
WHITE CRUDE SCALE (In barrels)			
122-124 A.m.p.	5.25	5.125– 5.25	5.125– 5.25
124-126 A.m.p.	5.25	5.125– 5.25	5.125– 5.25
FULLY REFINED (In burlap bags)			
123-125 A.m.p. Phila	5.75	5.75	5.75
125-127 A.m.p.	5.875– 6.00	5.75	5.75 – 5.875
128-130 A.m.p.	6.25 – 6.50	6.00 – 6.25	6.00 – 6.25
130-132 A.m.p.	6.50 – 6.75	6.50	6.50
133-135 A.m.p.	7.25	7.25	7.25
135-137 A.m.p.	7.75	7.75	7.75
YELLOW CRUDE SCALE			
124-126 A.m.p.	5.00 – 5.125	5.00 – 5.125	5.00

Gulf Export Market

(Prices are f. o. b. Gulf oil terminals in Texas and Louisiana, shipments of 20,000 bbls. and over unless otherwise noted, representing sellers' opinions, except those prices specified to the contrary)

GASOLINE	Dec. 17	Dec. 10	Dec. 3
U. S. Motor	8.75	9.00 – 9.125	9.125– 9.25
60-62 400 e.p.	10.25	10.50	10.50
61-63, 390 e.p.	10.50	10.75	10.75 –11.00
64-66, 375 e.p.	10.75	11.00	11.00 –11.25
U. S. Motor, cases (cargoes)	$1.80	$1.85	$1.85
64-66, cases (cargoes)	$1.95	$2.00	$2.00
KEROSENE			
44 water white	7.75	7.75	7.75
41-43 prime white	6.75	6.75	6.50 – 6.75
Water white, cases (cargoes)	$1.65	$1.65	$1.65
Prime white, cases (cargoes)	$1.55	$1.55	$1.55
DOMESTIC GAS & BUNKER OILS			
*26-30 translucent gas oil	3.75 – 3.875	3.75 – 3.875	3.75 – 3.875
*30-32 translucent gas oil	3.875	3.875	3.875
Grade C bunker oil	$0.875–$0.95	$0.95	$0.85 –$0.95
Grade C bunker oil, cargoes	$0.65 –$0.70	$0.67 –$0.70	$0.65 –$0.68

*Less than ½ of 1% sulfur.

MEXICAN CRUDE AND BUNKER OILS (F. O. B. Steamer, Tampico)			
Heavy Panuco crude taxes to be paid	$0.88 –$0.95	$0.90 –$0.95	$0.90 –$0.95
Grade C bunker oil, for bunkering purposes, taxes paid	$1.05	$1.05	$1.05
SOUTH TEXAS LUBRICATING OILS (Viscosity at 100°F.: cold test 0) (Tanker, f.o.b. Houston)			
100 vis. No. 2 unfiltered pale	6.25 – 6.375	6.25 – 6.375	6.25 – 6.375
200 vis. No. 3 unfiltered pale	8.50 – 9.50	8.50 – 9.50	8.50 – 9.50
300 vis. No. 3 unfiltered pale	9.25 –10.50	9.25 –10.50	9.25 –10.50
500 vis. No. 3½ unfiltered pale	11.00 –12.00	10.75 –12.00	10.75 –12.00
750 vis. No. 4 unfiltered pale	12.50 –13.00	12.50 –13.00	12.50 –13.00
1200 vis. No. 5 unfiltered pale	16.00 –17.00	15.50 –17.00	15.50 –17.00
200 vis. No. 5-6 red oil	7.50 – 8.50	7.00 – 8.50	7.00 – 8.50
300 vis. No. 5-6 red oil	8.75 – 9.25	8.00 – 9.25	8.00 – 9.25
500 vis. No. 5-6 red oil	10.00 –10.50	9.75 –10.50	9.75 –10.50
750 vis. No. 5-6 red oil	11.50 –12.00	11.25 –12.00	11.25 –12.00
1200 vis. No. 5-6 red oil	15.00 –16.50	14.50 –16.50	14.50 –16.50

Pacific Export Market

(Quotations are at seaboard, Los Angeles, in cargo lots, cents per gallon, except where otherwise noted.)

	Dec. 17	Dec. 10	Dec. 3
Gasoline, U. S. Motor, 53-55 Gravity	8.00 – 8.25	8.00 – 8.25	8.00 – 8.25
Gasoline, U. S. Motor, blends and special cuts	8.50 –10.25	8.50 –10.25	8.50 –10.25
Gas Oil, 30-34, per barrel	$1.05 –$1.15	$1.05 –$1.15	$1.05 –$1.15
Diesel Oil, 27 plus, per barrel	$0.95 –$1.10	$0.95 –$1.10	$0.95 –$1.10
Bunker oil, 14-18, per barrel	$0.70 –$1.00	$0.70 –$1.00	$0.70 –$1.00
Fuel oil, 14-18 per barrel	$0.70 –$1.00	$0.70 –$1.00	$0.70 –$1.00
Kerosene, 38-40 w.w., 125-150 flash, per gal.	5.50 – 6.26	5.25 – 6.00	5.25 – 6.00
Cased Goods			
Gasoline, U. S. Motor	$1.75 –$1.85	$1.75 –$1.85	$1.75 –$1.85
Kerosene, 38-40 w.w., 125-150 flash	$1.45 –$1.50	$1.45 –$1.50	$1.45 –$1.50

Tanker Rates

(Approximate tanker freight rates to Continental ports, in shillings per ton of 2240 pounds, British sterling; to American ports, cents per barrels)

	Dec. 17	
	Crude &/or Fuel	Refined Oil
Calif. to U. K. or Continental ports*	23	22–23
Gulf to U. K. or Continental ports*	13	12–13
North Atlantic to U. K. or Continental ports*	11/6	11
Calif. to North Atlantic ports (not E. of N. Y.)	50-55c	65c
Gulf and North Atlantic ports (not E. of N. Y.)**	16	20-25c

*Continental ports in the range between Bordeaux and Hamburg, both inclusive.

**For Venezuela loading 1c per bbl. additional. For Tampico loading 4c per bbl. additional.

Tank Wagon, Service Station Markets for Gasoline and Kerosene

(OIL PRICE HANDBOOK has t.w. and s.s. markets for the whole year, arranged for quick reference)

These Prices in Effect December 17, 1928, as Posted by Principal Marketing Companies

S.O. NEW JERSEY TERRITORY

	Gasoline				Oil
			Total		
	T.W.	Tax	T.W.	S.S.	T.W.
Atlantic City, N. J.	15	2	17	20	14
Newark, N. J.	15	2	17	20	14
Annapolis, Md.	15	4	19	22	14
Baltimore, Md.	15	4	19	22	12
Cumberland, Md.	15	4	19	22	14
Washington, D. C.	15	2	17	20	14
Danville, Va.	15	5	20	23	14
Norfolk, Va.	15	5	20	23	14
Richmond, Va.	15	5	20	23	14
Roanoke, Va.	15	5	20	23	14
Petersburg, Va.	15	5	20	23	14
Charleston, W. Va.	15	4	19	22	14
Keyser, W. Va.	15	4	19	22	14
Parkersburg, W. Va.	15	4	19	22	14
Wheeling, W. Va.	15	4	19	22	14
Charlotte, N. C.	15	4	19	22	14
Hickory, N. C.	15	4	19	22	14
Mt. Airy, N. C.	15	4	19	22	14
Salisbury, N. C.	15	4	19	22	14
Charleston, S. C.	15	5	20	23	14
Columbia S. C.	15	5	20	23	14

CONTINENTAL OIL

Denver, Colo.	14	3	17	20	14.5
Pueblo, Colo.	16	3	19	22	14.5
Grand Junc., Colo.	19.5	3	22.5	25.5	18
Casper, Wyo.	16	3	19	22	13
Cheyenne, Wyo.	17	3	20	23	14.5
Butte, Mont.	20.5	3	23.5	26.5	19
Helena, Mont.	20.5	3	23.5	26.5	19
Salt Lake City, Utah.	18.5	3½	22	25	17
Boise, Ida.	20.5	4	24.5	27.5	19
Twin Falls, Ida.	20.5	4	24.5	27.5	19
Albuquerque, N. M.	17	5	22	25	17

S. O. CALIFORNIA

Phoenix, Ariz.	12	4	16	20	21.5
Los Angeles, Cal.	13.5	3	16.5	20.5	15.5
Fresno, Cal.	14	3	17	21	16.5
San Francisco, Cal.	14	3	17	21	15.5
Reno, Nev.	18	4	22	26	19
Portland, Ore.	14.5	3	17.5	21.5	16.5
Seattle, Wash.	14.5	2	16.5	20.5	16.5
Spokane, Wash.	18.5	2	20.5	24.5	20.5
Tacoma, Wash.	14.5	2	16.5	20.5	16.5

S. O. LOUISIANA

Little Rock, Ark.	13	5	18	22	14
Alexandria, La.	13	2	15	18	†16
Baton Rouge, La.	12	2	14	17	†14.5
Lake Charles, La.	13.5	2	15.5	18.5	†16
New Orleans, La.	*11.5	2	*13.5	*16.5	†16
Shreveport, La.	13.5	2	15.5	18.5	†15
Lafayette, La.	13	2	15	18	†15.5
Bristol, Tenn.	16	3	19	22	15
Chattanooga, Tenn.	15.5	3	18.5	21.5	16
Knoxville, Tenn.	16	3	19	22	16
Nashville, Tenn.	15	3	18	21	16
Memphis, Tenn.	14	3	17	20	15

*New Orleans gasoline prices include 1c parish tax in addition to 2c state tax, and kerosene prices include 1c state tax and 1c parish tax.

†Kerosene price in Louisiana includes 1c state tax

S. O. KENTUCKY

Ashland, Ky.	17	5	22	24	15.5
Catlettsburg, Ky.	17	5	22	24	15.5
Lexington, Ky.	16	5	21	22	15.5
Louisville, Ky.	16	5	21	23	15
Covington, Ky.	17	5	22	22	15.5
Clarksdale, Miss.	18	4	22	24	13
Gulfport, Miss.††	19.5	4	23.5	25.5	14
Jackson, Miss.	16	4	20	22	14.5
Natchez, Miss.	17.5	4	21.5	23.5	14
Vicksburg, Miss.	17.5	4	21.5	23.5	14
Birmingham, Ala.	18	4	22	24	16
Mobile, Ala‡	18	4	22	24	15
Montgomery, Ala.*	16	4	20	21	16.5
Atlanta, Ga.	18	4	22	24	†16.5
Augusta, Ga.	18	4	22	24	†15.5
Macon, Ga.	18	4	22	22	†16.5
Savannah, Ga.	17	4	21	23	†15.5
Jacksonville, Fla.	18	5	23	25	14.5
Miami, Fla.	19	5	24	26	15.5
Tampa, Fla.	18	5	23	25	14.5
Pensacola, Fla.**	19	5	24	26	14.5

*Local privilege tax of 1 cent on gasoline and ½ cent on kerosene at Montgomery included. ‡Mobile gasoline prices include 1c city tax.

†Georgia kerosene prices include 1c state tax.

**Both tank wagon prices include 1c city tax at Pensacola, which went into effect Oct. 15, 1926.

††Both tank wagon prices at Gulfport include Harrison county privilege tax of 2c.

Latest Changes In Tank Wagon Prices

Gasoline Changes

S. O. Louisiana—T.w. and s.s. prices gasoline up 2c, Knoxville and Nashville, **Dec. 13.**

Continental Oil—T.w. and s.s. prices gasoline cut 2c, Denver, **Dec. 14.**

Canada—The 2c increase in gasoline tax in New Brunswick which was reported effective Dec. 1, in Dec. 12 issue of NATIONAL PETROLEUM NEWS, page 132, has been postponed to Jan. 1, according to latest reports. An order in council was passed recently postponing the effective date of the increase.

Kerosene Changes

S. O. New York—Check-up of kerosene prices in this territory reveals two local changes which had not been reported by the Standard's New York headquarters to NATIONAL PETROLEUM NEWS previously. The changes are a 1c cut at Buffalo on Jan. 13, 1927, which brought t.w. price to 14c, and a 2c cut at Syracuse, March 31, 1928, which brought t.w. price to 13c. These prices were in effect Dec. 17.

S. O. INDIANA

	Gasoline				Oil
			Total		
	T.W.	Tax	T.W.	S.S.	T.W.
Chicago, Ill.	15	0	15	16	12
Decatur, Ill.	15.2	0	15.2	15	12.1
E. St. Louis, Ill.	14.4	0	14.4	16.4	11.2
Joliet, Ill.	15.4	0	15.4	17.4	12.3
Peoria, Ill.	15.2	0	15.2	14	12.1
Quincy, Ill.	15.2	0	15.2	17.2	11.9
Indianapolis, Ind.	15.2	3	18.2	18.2	13.2
Evansville, Ind.	15	3	18	20	13
South Bend, Ind.	15.4	3	18.4	20.4	13.4
Detroit, Mich.	15.8	3	18.8	20.8	13.7
Grand Rapids, Mich.	15.7	3	18.7	20.7	13.6
Saginaw, Mich.	15.9	3	18.9	20.9	13.8
Green Bay, Wis.	15.6	2	17.6	19.6	12.4
Madison, Wis.	15.3	2	17.3	17.3	12.1
Milwaukee, Wis.	15.1	2	17.1	19.1	11.9
La Cross, Wis.	16.2	2	18.2	20.2	13
Minneapolis, Minn.	16.2	2	18.2	20.2	12.9
Duluth, Minn.	16.5	2	18.5	20.5	12.9
Mankato, Minn.	16.1	2	18.1	20.1	12.7
Des Moines, Ia.	15.5	3	18.5	18.5	12.3
Davenport, Ia.	15.5	3	18.5	20.5	12.3
Sioux City, Ia.	15.1	3	18.1	20.1	11.9
Mason City, Ia.	15.5	3	18.5	20.5	12.3
St. Louis, Mo.	*14.9	2	16.9	16.9	11.3
Kansas City, Mo.	†15.9	2	17.9	17.9	10.6
St. Joseph, Mo.	†15.5	2	17.5	17.5	11.2
Fargo, N. D.	17.9	2	19.9	21.9	14.9
Grand Forks, N. D.	18.2	2	20.2	22.2	15.2
Minot, N. D.	17.9	2	19.9	21.9	14.9
Pierre, S. D.	16	4	20	22	13.4
Huron, S. D.	16.3	4	20.3	22.3	13.7
Wichita, Kans.	13.8	2	15.8	17.8	10.8
Bartlesville, Okla.	13.5	3	16.5	18.5	10.5

S. O. Indiana's quantity contract price schedule on tank truck deliveries of gasoline, figured from the service station price, is 2c for 500 gals. or more a month; 2½c for 2000 gals. or more a month; and 3c for 6000 gals. or more a month.

*Includes city tax of ½c

†Includes city tax of 1c.

S. O. OHIO

	Gasoline				Oil
			Total		
	T.W.	Tax	T.W.	S.S.	T.W.
All Ohio points	*16	3	*19	20	12

*S. O. Ohio recognizes a maximum discount to dealers of 3c per gal. under its service station price of gasoline. Government agencies and public utility users are allowed 2c off the service station price.

S. O. NEBRASKA

Omaha, Neb.	15.25	2	17.25	19.25	12.25
McCook	16.75	2	18.75	20.75	13.75
Norfolk	15.75	2	17.75	19.75	12.75
North Platte	16.75	2	18.75	20.50	13.50
Scottsbluff	16.75	2	18.75	20.75	13.25

MAGNOLIA PETROLEUM

Muskogee, Okla.	15	3	18	20	12
Oklahoma City	15	3	18	20	12
Tulsa, Okla.	14	3	17	19	10
Fort Smith, Ark*	15	†3	18	20	14
Little Rock, Ark.	16	5	21	23	14
Texarkana, Ark.*	14.5	*2	16.5	20.5	13
Dallas, Tex.	14	2	16	20	12
Fort Worth, Tex.	14	2	16	19	12
Houston, Tex.	14	2	16	20	15
San Antonio, Tex.	12	2	14	17	11
El Paso, Tex.	15	2	17	20	16

*Within city of Texarkana, the state tax on gasoline is 2c per gal. conforming with the Texas state tax. In this district outside of the city the 5c Arkansas tax applies.

†Within city of Fort Smith, Oklahoma tax of 3c applies. In this district outside of the city, the 5c Arkansas tax applies.

S. O. NEW YORK

Due to local price conditions at many points in S. O. New York territory, actual prices on both gasoline and kerosene are being made at under the posted tank wagon prices published below.

New York City	18	0	18	*20	15
Albany, N. Y.	18	0	18	21	15
Buffalo, N. Y.	18	0	18	20	14
Rochester, N. Y.	18	0	18	20	13
Syracuse, N. Y.	18	0	18	20	13
Boston, Mass.	17	0	17	18	15
Augusta, Me.	17	4	21	22	15
Manchester, N. H.	17	4	21	22	15
Burlington, Vt.	17	3	20	21	15

*The Standard of New York does not operate stations in New York City. This figure is the retail price of a principal station operator in New York, selling Socony gasoline.

ATLANTIC REFINING

Pittsburgh, Pa.	†16	*	†16	*20	15
Philadelphia, Pa.	†16	*	†16	*20	15
Allentown, Pa.	†16	*	†16	*20	15
Erie, Pa.	†16	*	†16	*20	15
Scranton, Pa.	†16	*	†16	*20	15
Altoona, Pa.	†16	*	†16	*20	15
Dover, Del.	†16	3	†19	20	15
Wilmington, Del.	†16	3	†19	20	15
Boston, Mass.	17	0	17	18	15
Springfield, Mass.	17	0	17	18	15
Worcester, Mass.	17	0	17	18	15
Providence, R. I.	17	2	19	20	15
Hartford, Conn.	17	2	19	20	14
New Haven, Conn.	17	2	19	20	15

*3-cent state tax is collected by retail dealer and paid by him directly to state.

†The Atlantic Refg. Co. recognizes a 2c a gal. discount from its posted tank wagon market for dealers for resale.

For commercial accounts under definite contract for a year's supply, the company recognizes a discount of 1c below t.w. market where contract calls for between 5,000 and 10,000 gals. a year, and 2c where contract calls for deliveries above 10,000 gals., where deliveries on the account are by tank wagon.

For such commercial accounts taking deliveries from service stations, the same discounts apply but are figured from the posted service station price.

V. M. & P. NAPHTHA

(Changes ordinarily occur coincident with gasoline price changes)

	Oleum Spirits	V.M.&P. Naphtha	Cleaner Naphtha
Chicago	14.7	16.2	18
Detroit	16.4	17.9	19.7
Kansas City	†14.9	†16.4	†18.2
Milwaukee	15.4	*18.9	*20.7
Minneapolis	*18.7	*20.2	*22
St. Louis	14.6	16.1	17.9
New York		20	....

*Includes 2c state tax. †Includes 1c city tax.

Above prices include these inspection fees on both gasoline and kerosene, per gallon: Alabama, 1/40c on gasoline, 1/2c kerosene; Arkansas, 1/20c on both; Colorado, 1/10c on both; Florida, 1/8c on both; Indiana, 2/25c on both; Kansas, 1/50c on both; Louisiana, 1/32c on gasoline, 1c on kerosene; Minnesota, 3/50c on both; Missouri, 1/50c on both; Nebraska, 3/50 to 1/2c on both; North Carolina, 1/4c on both; North Dakota, 1/20c on both; Oklahoma, 4/25c on both; South Carolina, 1/8c on both; South Dakota, 1/10c on both; Tennessee, 2/5c on gasoline and 1/2c on kerosene; Wisconsin, 3/50c on both.

Kerosene inspection fees only: Iowa, 13/100c; Michigan, 1/5 to 4/5c per gal.

In Illinois, cities and villages have the power to appoint oil inspectors and fix inspection fees which is done in some instances. In some cases in the above states or other states there are local inspection fees.

Tank Wagon, Service Station Markets for Gasoline and Kerosene

CANADA

Prices in Effect December 17, 1928

(Per Imperial Gallon, which is 1.2 American Gallons)

	Gasoline				Oil
	T.W.	Tax	Total T.W.	S.S.	T.W.
ONTARIO					
Toronto	20.5	3	23.5	27	22
Ottawa	20.5	3	23.5	27	22
Cochrane	25.5	3	28.5	...	27
Ft. William	23.5	3	26.5	30	23.5
MANITOBA					
Winnipeg	22.5	3	25.5	29	22.5
SASKATCHEWAN					
Regina	27	3	30	34	27
ALBERTA					
Edmonton	27.5	3	30.5	34	27.5
Calgary	23.5	3	26.5	30	23.5
BRITISH COLUMBIA					
Vancouver	22	3	25	29	25
QUEBEC					
Montreal	21.5	5	26.5	30	22
Quebec City	22.5	5	27.5	31	23
Three Rivers	22.5	5	27.5	31	23
NEW BRUNSWICK					
St. John	25	3	28	31.5	25
Moncton	25	3	28	31.5	25
NOVA SCOTIA					
Halifax	25	5	30	33.5	25
Sydney	25	5	30	33.5	25
PRINCE EDWARD ISLAND					
Charlottetown	25	5	30	33.5	25

Note: In districts surrounding these points 1c additional is added to city price.

Barton Is Made President Of Lion Oil Refining

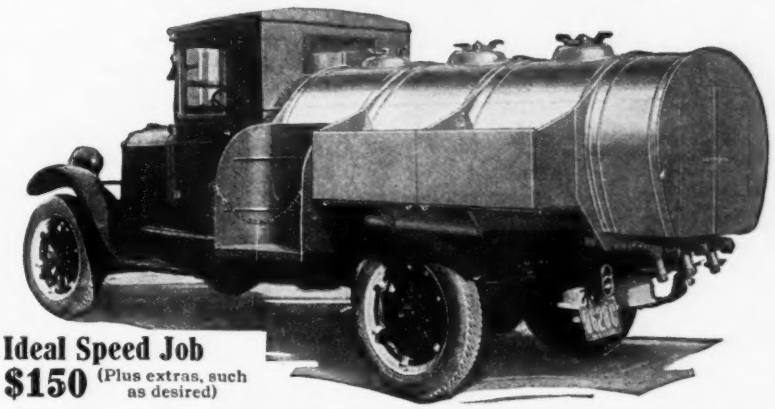
KANSAS CITY, Dec. 15.—E. C. Winters was named chairman of the board of directors of the Lion Oil Refining Co. and Col. T. H. Barton, El Dorado, Ark., was elected president at the annual meeting in Kansas City Dec. 15. T. M. Martin, formerly with the Mid-Continent Petroleum Corp. at St. Louis, was elected a vice-president, a director and was named secretary of the company.

The directors at the same time accepted the resignation of H. M. Breidenthal as vice-president, general manager and secretary. The directors also voted the regular quarterly dividend of 50 cents a share.

Colonel Barton, who becomes the company's new president, is vice-president of the Arkansas Natural Gas Corp. at El Dorado. His position with the Lion Oil Refining Co. does not mean that that company has become affiliated in any way with the H. L. Doherty interests.

Mr. Winters, Colonel Barton and Mr. Martin will assume their new positions Jan. 1.

Here It Is, *Sir!*



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Crude Oil Prices (in Effect Dec. 17)

(Crude prices for the whole year in OIL PRICE HANDBOOK published annually)

EASTERN FIELDS

(Posted by Joseph Seep Purchasing Agency)

Penna. Grade Oil in New York Transit Lines (Alleghany, N. Y. District)	$3.85
Bradford District Oil in National Transit Lines (Bradford District)	3.85
Penna. Grade Oil in National Transit Lines (Other Pennsylvania)	3.75
Penna. Grade Oil in Southwest Penna. Pipe Lines (Other Pennsylvania)	3.75
Penna. Grade Oil in Eureka Pipe Lines (West Virginia)	3.65
Penna. Grade Oil in Buckeye Pipe Lines (Macksburg, O. district)	3.60
Cabell Grade in Eureka Pipe Lines (West Virginia)	1.45
Corning Grade in Buckeye Pipe Lines (Ohio)	1.90
Corning, O., heavy grade	1.80
Somerset Oil in Cumberland Pipe Lines (Kentucky)	1.75
Ragland Grade in Cumberland Pipe Lines (Kentucky)	.95

(Posted by Stoll Oil Refining Co.)

Oil City, Ky., oil in Stoll lines	$1.75

CENTRAL STATES FIELDS

Posted by Ohio Oil Co.

Effective July 27, 1928

Wooster (Oct. 17)*	$1.77	Princeton	$1.55
Lima	1.60	Illinois	1.55
Waterloo	1.20	Plymouth	1.28
Indiana	1.37	West Kentucky	1.63

*Wooster crude run prior to Oct. 17, 1928 takes price of $1.67.

CANADIAN CRUDE

Posted by Imperial Oil Refineries, Ltd.

Petrolia	$2.00
Oil Springs	2.07

OKLAHOMA, KANSAS and NORTH TEXAS

Prices of Prairie Oil & Gas Co.

(In Oklahoma, Kansas, North and East Central Texas)

Effective July 26, 1928

Below 25	$0.60	35-35.9	$1.31
25-25.9	0.67	36-36.9	1.36
26-26.9	0.74	37-37.9	1.41
27-27.9	0.81	38-38.9	1.46
28-28.9	0.88	39-39.9	1.51
29-29.9	0.95	40-40.9	1.56
30-30.9	1.02	41-41.9	1.61
31-31.9	1.09	42-42.9	1.66
32-32.9	1.16	43-43.9	1.71
33-33.9	1.21	44 and above	1.76
34-34.9	1.26		

Humble Oil & Refining Co. Prices

(Ranger, North Texas, Mexia, Powell, Richland, Wortham, Lytton Springs, Currie, Moran and Nocona crudes all in Texas.)

July 26, same schedule as Prairie.

Mirando, Tex	$1.00

Magnolia Petroleum Co.

(In Oklahoma, Kansas and North and East Central Texas)

July 26, Magnolia posted in above fields and in Panola Co., same schedule as Prairie, except these grades posted Aug. 2

Below 25	$0.60	27-29.9	$0.75
25-25.9	0.67	30-30.9	0.90
26-26.9	0.74	31-31.9	1.05

Glasscock, Crane, Upton, Winkler Counties	0.65
Chalkfield (Howard Co.)	0.80
Iatan district	0.93
Corsicana heavy	1.00

Carter Oil Co.

(Oklahoma and Kansas)

July 26, same schedule as Prairie except Carter does not post oil below 25.

PANHANDLE, TEXAS

Humble Oil & Refining Co.

Effective July 26, 1928

Hutchinson and Carson Counties:

Below 32	$0.69	38-38.9	$1.06
32-32.9	0.76	39-39.9	1.11
33-33.9	0.81	40-40.9	1.16
34-34.9	0.86	41-41.9	1.21
35-35.9	0.91	42-42.9	1.26
36-36.9	0.96	43-43.9	1.31
37-37.9	1.01	44 and above	1.36

Wheeler County:

Below 30	$0.65	37-37.9	$1.11
30-30.9	0.72	38-38.9	1.16
31-31.9	0.79	39-39.9	1.21
32-32.9	0.86	40-40.9	1.26
33-33.9	0.91	41-41.9	1.31
34-34.9	0.96	42-42.9	1.36
35-35.9	1.01	43-43.9	1.41
36-36.9	1.06	44 and above	1.46

Gray County:

Below 29	$0.68	37-37.9	$1.21
29-29.9	0.75	38-38.9	1.26
30-30.9	0.82	39-39.9	1.31
31-31.9	0.89	40-40.9	1.36
32-32.9	0.96	41-41.9	1.41
33-33.9	1.01	42-42.9	1.46
34-34.9	1.06	43-43.9	1.51
35-35.9	1.11	44 and above	1.56
36-36.9	1.16		

WEST TEXAS

Humble Oil & Refining Co.

Effective July 26, 1928

Winkler, Crane, Upton, Crockett, and Pecos Counties	$0.65

NORTH LOUISIANA—ARKANSAS FIELDS

Prices of Standard Oil Co. of Louisiana

Caddo, Homer, Haynesville, Bull Bayou, El Dorado, Crichton, De Soto and **Cotton Valley.

Effective Aug. 2, 1928

Below 28	$0.81	36-36.9	$1.36
28-28.9	0.88	37-37.9	1.41
29-29.9	0.95	38-38.9	1.46
30-30.9	1.02	39-39.9	1.51
31-31.9	1.09	40-40.9	1.56
32-32.9	1.16	41-41.9	1.61
33-33.9	1.21	42-42.9	1.66
34-34.9	1.26	43-43.9	1.71
35-35.9	1.31	44 and above	1.76

**Cotton Valley, below 36, $0.75. Beginning with 36-36.9, same schedule as above.

Smackover, below 24	$0.75
do 24 and above	.90
Bellevue	1.25
*Urania, La	.90
†East El Dorado	0.75

*Posted by Louisiana Oil Refining Corp.

†Posted by Magnolia Petroleum Co.

Smackover prices posted on Feb. 7 by S. O. La., Gulf, Shreveport-El Dorado Pipe Line, Atlantic Oil Producing Co. and The Texas Co.; on Feb. 8 by Magnolia; on Feb. 6 by La. Oil Refg. Corp.

Aug. 8 The Texas Co., same schedule in Louisiana as Standard, plus these grades: 24-24.9, $0.60; 25-25.9, $0.67; 26-26.9, $0.74; 27-27.9, $0.81.

Aug. 7 Magnolia Petroleum met Standard schedule in Louisiana-Arkansas fields.

STEPHENS, ARKANSAS

Louisiana Oil Refining Corp., and Atlantic Oil Producing Co.

Effective Aug. 2, 1928

Below 28	$0.75	30-30.9	$0.87
28-28.9	0.79	31-31.9	0.91
29-29.9	0.84	32 and above	0.95

GULF COASTAL

Posted by Humble Oil & Refining Co.

Effective March 14, 1927

Grades A	$1.20	29-29.9	$1.25
Grades B:		30-30.9	1.27
Below 25	1.15	31-31.9	1.29
25-25.9	1.17	32-32.9	1.31
26-26.9	1.19	33-33.9	1.33
27-27.9	1.21	34-34.9	1.35
28-28.9	1.23	35 and above	1.37

Fields classified as A and B are Spindletop, Goose Creek, Hull, Liberty, Sour Lake, West Columbia, Orange, Boling, Pierce Junction, Sugarland and Raccoon Bend. All other fields are Grades A only

Crude Price Changes

OIL CITY—On Dec. 14 Joseph Seep Purchasing Agency for the sixth time this year, raised prices of Pennsylvania grade crude. The advance was 25 cents per barrel on all Pennsylvania grades except Macksburg, O. district in Buckeye Pipe Line lines, which was raised 35 cents. Cabell, Corning, Somerset and Ragland were unchanged. New prices are: Pennsylvania grade crude in New York Transit and National Transit lines (Bradford-Alleghany district), $3.85; Pennsylvania crude in National Transit and Southwest Pennsylvania Pipe Line lines (rest of Pennsylvania), $3.75; Pennsylvania crude in Eureka Pipe Line lines (West Virginia), $3.65; Pennsylvania crude in Buckeye Pipe Line lines (Macksburg, O. district), $3.60.

Last previous change was 15 cent advance on Nov. 9.

This is the first year since 1920 during which there have been no decreases in price of Pennsylvania crude. Total increases during 1928 amounted to $1.05.

OIL CITY—On Dec. 17 Joseph Seep Purchasing Agency advanced Corning, O. crude 10 cents per barrel, making new prices $1.90 for medium grade, and $1.80 for heavy grade. Last previous change was a 10 cent advance on Aug. 8.

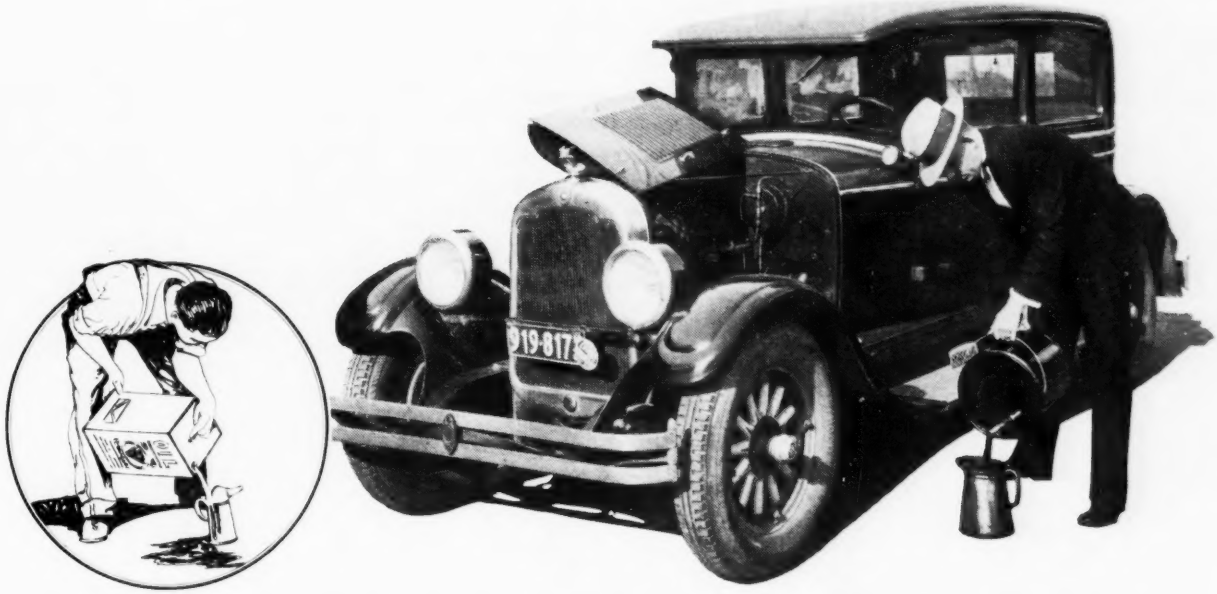
Doud Joins Sun Oil Co.'s Chicago Staff

CHICAGO, Dec. 15.—C. E. Doud is back in the oil business. He is now manager of the motor oil and gasoline departments of Sun Oil Co., 2429 S. Halsted St., Chicago. When he resigned as sales manager of Lynch-Clarisey Co., Chicago, in November, 1926, to enter another business a group of his associates gave him a farewell dinner and assured him he would return to oil marketing inside of two years. It lacked a few days being two years when he came back.

Mr. Doud entered the oil business in charge of furnace oil and fuel oil sales for Lynch-Clarisey, in 1923. He had been in the oil burner business before that and Lynch-Clarisey had been engaged principally in compounding lubricating oils before.

Mr. Doud, Lynch-Clarisey and the oil fuel business as a whole, expanded together for three years, after which he entered the steel door business in Laporte, Ind.

PITTSBURGH, Dec. 13.—Myron Evans, general manager of the Island Petroleum Co., has been confined to his home since Monday by a cold.



The NEW Replaces The OLD

The new BENETCO pouring spout pail puts the oil where you want it without soiling hands or clothes.

RIDICULOUS, of course, for a man to put oil into a car while wearing evening clothes, but the picture illustrates the fact that the new Benetco pouring spout pail is convenient and clean to use.

Your customers will appreciate using an oil container that pours smoothly and quickly without the splashing, dripping, and gurgling so common with other style containers. You will profit by using a container with these advantages and in addition is so sturdy and attractive.

Let us tell you more about *this* remarkable new container. A letter will bring you full particulars without obligation.

WILSON & BENNETT MFG. CO.

6520 S. Menard Ave. CHICAGO

BENETCO
Steel Containers

Crude Oil Prices (in Effect Dec. 17)

(Crude prices for the whole year in OIL PRICE HANDBOOK published annually)

GULF COASTAL

Prices of The Texas Co.

Effective March 14, 1927

Grades A	$1.20	*Grades B	$1.15
‡Grades B (light crude):			
35-35.9	$1.37	38-38.9	$1.43
36-36.9	1.39	39-39.9	1.45
37-37.9	1.41	40 and above	1.47

*Grades B include all heavy crudes which do not meet tests for Grades A or for Gulf Coast light crude.

‡The Texas Co.'s gravity and price schedule on all below 35° is same as Humble's postings on Grades B.

ROCKY MOUNTAIN FIELDS

Prices of Ohio Oil Co., and Midwest Refining Co.

(Salt Creek prices effective July 26, 1928)

‡Salt Creek	29-29.9	$0.95
" "	30-30.9	1.02
" "	31-31.9	1.09
" "	32-32.9	1.16
" "	33-33.9	1.21
" "	34-34.9	1.26
" "	35-35.9	1.31
" "	36-36.9	1.36
" "	37 and above	1.41
Elk Basin		1.48
Grass Creek light		1.48
Big Muddy		1.33
Lance Creek		1.48
Rock Creek		1.33
Mule Creek		1.10
Rex Lake		1.10
‡Osage		1.48
‡Cat Creek, Mont.		1.48
Sunburst, Mont		1.65
‡Hogback, N. Mex		1.53
Artesia, N. Mex		1.08

‡Posted by Midwest Refining Co. Midwest also buys Grass Creek light and Elk Basin.

CALIFORNIA

***Standard Oil Co. of California**

Gravity	Signal Hill Seal Beach Alamitos Heights Huntington Beach	Inglewood Torrance	Olinda-Brea Canon Richfield	Athens-Rosecrans Dominguez	Whittier La Habra	Coyote Hills	Santa Fe Springs	Newhall McKittrick	†Kern River	Midway Sunset Buena Vista & Elk Hills	Lost Hills	Coalinga	Wheeler Ridge	Montebello	Santa Maria	Ventura
14-14.9	$ .85	$ .85	$ .85	....	$ .85	$ .85	....	$ .75	$ .50	$ .75	$ .75	$ .75	$ .75	$ .85	$ .85	$ .85
15-15.9	.85	.85	.85	....	.85	.85	....	.75	.50	.75	.75	.75	.75	.85	.85	.85
16-16.9	.85	.85	.85	....	.85	.85	....	.75	.50	.75	.75	.75	.75	.85	.85	.85
17-17.9	.85	.85	.85	....	.85	.85	....	.75	.50	.75	.75	.75	.75	.85	.85	.85
18-18.9	.85	.85	.85	....	.85	.85	....	.75	.50	.75	.75	.75	.75	.85	.85	.85
19-19.9	.85	.85	.85	....	.85	.85	....	.75	.50	.75	.75	.75	.75	.85	.85	.85
20-20.9	.85	.85	.85	....	.85	.85	....	....	....	.77	.77	.77	.77	.86	.85	.85
21-21.9	.89	.89	.89	....	.88	.88	.89	....	....	.79	.79	.79	.79	.89	.86	.86
22-22.9	.93	.93	.93	....	.91	.91	.92	....	....	.82	.82	.82	.82	.92	.87	.80
23-23.9	.97	.97	.97	....	....	.94	.95	....	....	.86	.86	.85	.85	.95	.90	.97
24-24.9	1.01	1.01	1.01	1.01	....	.97	.98	....	....	.90	.90	.88	.88	.98	.93	.94
25-25.9	1.05	1.05	1.05	1.05	....	1.00	1.01	....	....	.95	.95	.91	.91	1.01	.95	.98
26-26.9	1.09	1.09	1.09	1.09	....	1.04	1.04	....	....	1.00	1.00	.94	.94	1.04	.97	1.02
27-27.9	1.13	1.13	1.13	1.13	....	1.08	1.07	....	....	1.05	1.05	.98	.97	1.07	....	1.06
28-28.9	1.17	1.17	1.17	1.17	....	1.12	1.10	....	....	1.10	1.10	1.02	....	1.10	....	1.10
29-29.9	1.21	....	1.21	1.21	....	1.16	1.15	....	....	1.16	1.16	1.06	....	1.13	....	1.14
30-30.9	1.25	....	1.25	1.25	....	1.20	1.20	....	....	1.22	1.22	1.10	....	1.16	....	1.18
31-31.9	1.30	....	....	1.30	....	....	1.25	....	....	1.28	1.28	1.14	....	....	....	1.23
32-32.9	1.35	....	....	1.35	....	....	1.30	....	....	1.34	1.34	1.18	....	....	....	1.28
33-33.9	....	....	....	1.41	....	....	1.35	....	....	1.40	1.40	1.22	....	....	....	....
34-34.9	....	....	....	1.47	....	....	1.40	....	....	....	1.46	1.26	....	....	....	....
35-35.9	....	....	....	1.53	....	....	1.45	....	....	....	....	1.30	....	....	....	....
36-36.9	....	....	....	1.59	....	....	1.50	....	....	....	....	....	....	....	....	....
37-37.9	....	....	....	1.65	....	....	1.55	....	....	....	....	....	....	....	....	....
38-38.9	....	....	....	1.71	....	....	1.60	....	....	....	....	....	....	....	....	....
39-39.9	....	....	....	1.77	....	....	1.65	....	....	....	....	....	....	....	....	....
40-40.9	....	....	....	1.83	....	....	....	....	....	....	....	....	....	....	....	....
41-41.9	....	....	....	1.89	....	....	....	....	....	....	....	....	....	....	....	....
42-42.9	....	....	....	1.95	....	....	....	....	....	....	....	....	....	....	....	....

*Santa Maria and Ventura postings are by Union Oil Co. Union Oil Co. posts same prices in all above fields as Standard except in Montebello and Wheeler Ridge. It also posts Elwood Terrace at same price as Rosecrans—Dominguez and also posts Santa Maria (Orcutt) and Ventura.

†Kern River down to 12° gravity is 50c; 11-11.9 is 45c.

REFINERS' and COMPOUNDERS' SUPPLIES

Following are average market prices for materials used by refiners and compounders effective on the date shown.

Refiners' Supplies

	Dec. 17	Dec. 10
Soda Ash light 58% bags, cwt.	$1.32	$1.32
Silicate of Soda 60 deg. drums, cwt.	$1.55	$1.55
Silicate of Soda 40 deg. tank cars, cv	$0.60	$0.60
Silicate of Soda 40 deg. drums, cwt.	$0.80	$0.80
Sal Soda wks	$0.90-1.00	$0.90-1.00
Caustic Soda 76% solid, cwt.	$2.90	$2.90
Sulfuric Acid 60 deg. tank cars, f.o.b. shipping point per ton	$11.00	$11.00
Oleum 20%, fuming sulfuric, tank cars, wks	$18.50	$18.50
Sulfur, flowers of, cwt.	$3.10-4.00	$3.10-4.00
Liquid Chlorine, tank cars, wks, lb.	3.00-4.50	3.00-4.50
Litharge, powered, casks, cwt.	9.00	9.00

Compounders' Supplies

	Dec. 17	Dec. 10
Vegetable Oils		
Linseed carloads, spot, lb.	10.00	10.20
Tanks, spot	9.20	9.40
Soya Bean, Tanks, coast, lb.	9.75	9.75
Oleic Acid		
Distilled, tanks, lb.	9.25	9.25
Distilled, bbls, lb.	10.00	10.00
Saponified, tanks, lb.	9.50	9.50
Saponified, bbls, lb.	10.25	10.35
Lard Oils		
Prime Winter Strained, lb.	16.00	16.00
Extra Winter Strained, lb.	14.00	14.00
Extra, lb.	13.50	13.50
Extra No. 1, lb.	13.00	13.00
No. 1, lb.	13.00	13.00
No. 2, lb.	12.25	12.25
Tallow oil, lb.	12.25	12.25
Neatsfoot Oil		
Pure, bbls, lb.	15.25	15.25
Extra, bbls, lb.	13.25	13.25
No. 1 bbls, lb.	13.00	13.00
Cold Pressed, lb.	19.00	19.00
Fish Oils		
Menhaden Oil		
Light Pressed, gal.	66-68	66-68
Light Pressed, tank cars, N. Y., gal.	59-60	59-60
White bleached, gal.	73-74	73-74
Yellow bleached, gal.	70-72	70-72
Whale, extra winter bleached, gal.	84	84
Naval Stores		
Steam distilled turpentine, N. Y., gal.	59	59
Steam distilled turpentine, Savannah, gal.	54	54
Gum turpentine, N. Y., gal.	62	62
Gum turpentine, f.o.b. cars Savannah, gal.	58	58
Wood Rosin F, N. Y., bbl.	$8.20	$8.20
Wood Rosin F, Savn'h., bbl.	$7.40	$7.40
Gum Rosin B, N. Y., bbl.	$9.00	$9.00
Gum Rosin B, f.o.b. cars Savannah, bbl.	$8.30	$8.30
Rosin oil, pure, gal.	62	62
Rosin oil, compounded, gal.	51	51
Pine Tar		
Kiln burnt, bbl.	$13.00-14.00	$13.00-14.00
Retort, bbl.	$13.50-14.50	$13.50-14.50
Alcohol		
Denatured, Formula 5, in bbls., per gal	55-62	55-62

*Nominal.

Ellisco

REG. U.S. PAT. OFF.

SUPER-SERVICE CANS FOR THE OIL TRADE

They supply ALL your needs!

Side-Rack Oil Cans

All steel welded, coated with pure tin inside and out.

Equipped with the new non-spillable, locking top.

Made in 5 and 10 gallon sizes. Five gallon size also comes with self-centering bail handle.

Five Gallon Tank-Truck Measuring Cans

One-piece body, protected with re-inforcing jacket. Made with Ellisco Tripl-Lock Seams, accurately gauged. Convenient for the drivers, durable in service, most economical in the long run.

With self-centering bail handles.

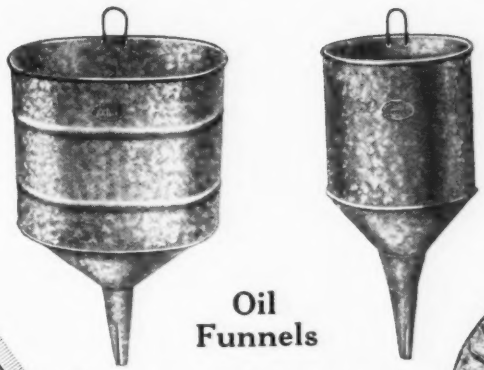
Our catalog shows other measuring cans, buckets and funnels.

The Standard in Cans for the Oil Trade

Buyers have become so accustomed to looking to Ellis for the latest and best features in tank truck equipment that the Ellisco has become the standard.

The serviceability of Ellisco Side Rack Cans and Ellisco Measuring Cans has caused many cost checking buyers to replace all oil containers with Ellisco Equipment, effecting savings which mount high each year. Our catalog shows the trademarks of nationally known distributors using Ellisco Equipment.

Send for our catalog illustrating complete equipment



Oil Funnels

In all sizes and shapes needed—from the oval funnel, (left) to the high hat style illustrated, (above, right) which is made in 4 sizes—1 gallon to 10 gallon capacity. Special sizes and shapes to meet specific needs can be made to order if they do not appear in catalog.

Tank Truck Filling Stems

A sturdy, convenient connection of heavy galvanized steel tubing for filling compartments in tank trucks. Equipped with elbow to permit complete drainage, strongly braced and re-inforced. *In four sizes, from 1 15/16" to 3 15/16" inside diameters. 53½" long, not including elbow.* Painted any desired color

GEO. D. ELLIS & SONS, Inc.

Established 1843

220 Wood St. **Philadelphia, Pa.**

Resales Fail to Improve Tests Of Gas Oil and Gasoline

Staff Special
TULSA, Dec. 15

A LEOPARD cannot change its spots. Of course a plentiful application of peroxide might have some effect, but who wants to wrestle with a leopard while applying the bleaching agent?

Neither can a car of gasoline change its boiling range, nor a car of gas oil change its gravity and become distillate—unless through some outside agency. But two instances of such attempted changes have come to light in the last few weeks in the Mid-Continent.

The car of gas oil probably is the most interesting and will be aired first. An Oklahoma refiner received a long distance call from a customer who bought considerable fuel oil from him. The customer said he needed a car of gas oil. He explained he was buying it for a friend who wanted a 34 gravity gas oil, and since the friend did not have an account with the refiner, he had volunteered to buy the car.

The sale was made. About 10 days later the refiner received the following wire from a jobber up in Illinois:

"That car of distillate tests only 34 gravity." The refiner was puzzled. He hadn't sold the jobber the distillate but after checking car numbers found the goods in the car was just what he had sold to the first purchaser—32-36 gas oil. He started checking back, and here's what he found:

The original purchaser had turned the car over to his friend. The friend had sold the gas oil as a 34-36 gravity product. The new buyer, who was a broker, as was the "friend," sold the goods as a 34-38 gravity gas oil. The sale was to still another broker in another city. This broker sold the car as 36-38 gravity straw gas oil. The sale was to still another broker. This broker then sold the car to another broker as a 36-40 gravity product. The goods then was sold to the jobber as a 38-40 straw distillate.

A refiner not so long ago sold a broker some 58-60, 450 e. p. gasoline. The broker sold the goods to another broker as 58-60, 440 e. p. gasoline. This broker sold the gasoline to a jobber as a 58-60, 437 e. p. gasoline. He had gambled on the three points. But he lost. The jobber ran a distillation, and the check showed 58-60, 446 e. p. gasoline.

STANDARD
O
I
L
ISSUES

SOUTH PENN
OIL CO.

NEW STOCK
(WHEN ISSUED)

BOUGHT—SOLD—QUOTED

CARL H. PFORZHEIMER & CO.
Specialists in Standard Oil and Miscellaneous Oil Securities
25 Broad Street New York

Barnsdall to Redeem Debentures Feb. 15

CLEVELAND, Dec. 15.—Barnsdall Corp. has called for redemption Feb. 15, 1929, its 15-year 6 per cent sinking fund gold debentures issued early in 1925 in payment for the properties of the Waite Phillips Co. There are outstanding $21,155,500 of the debentures, the company has advertised.

The redemption price will be 106 per cent if the debentures have attached the original two stock purchase warrants; 103 per cent if only one warrant is attached, and at par if no warrant is attached.

Each warrant entitles the holder to purchase a share of Barnsdall class A capital stock for $25. Many of the warrants have been exercised and the proceeds from the sale of the stock has been used to retire the debentures the original issue of which amounted to $25,000,000.

The company has announced that warrants must be exercised by or on Jan. 31, 1929, as they will become void at the close of business that day.

The Barnsdall A stock has been selling above $40 a share and the warrants have been selling for the difference between the market price and the $25 purchase right price.

John Carson Now Heads Lake Petroleum Co.

CHICAGO, Dec. 15.—John M. Carson, a carload marketer in the Chicago oil community for about 15 years, this week acquired George N. Moore's interest in the Lake Petroleum Co., 38 S. Dearborn St. and took over the management of it immediately. The trade had just learned of his resignation from the position of sales manager of Atlas Petroleum Co., 624 S. Michigan Ave.

Lake Petroleum Co., is a carload marketing company about five years old. Its president, George N. Moore whom Mr. Carson bought out, was one of the organizers. Mr. Moore was once president of Western Petroleum Refiners association and has a wide acquaintance in the trade.

Mr. Moore soon is to become superintendent of J. S. Cosden's new refinery in West Texas. The output of the refinery is to be handled largely through the offices of Lake Petroleum Co., in Chicago, it is said. Mr. Cosden lives in New York. He was the founder of Cosden & Co., now known as Mid-Continent Petroleum Corp., of Tulsa.

Atlas Petroleum Co., from which Mr. Carson resigned, is an interest of J. F. Taxman of Kansas City. The main office of Atlas will be moved to Kansas City soon, leaving only a branch office in Chicago. Mr. Carson has been associated with the Taxman interests for a long time. He was president of Taxman Refining Co. with headquarters in Chicago for several years when that organization marketed the complete output of Cosden & Co.'s plant in West Tulsa.

S. O. New Jersey Lists Employes' Stock

NEW YORK, Dec. 14.—Standard Oil Co. of New Jersey have applied for listing of 400,000 additional $25 shares on the New York Stock Exchange. This stock is to be sold employes under the company's third employes' stock acquisition plan.

Rio Grande to Split Stock

EL PASO, Tex., Dec. 14.—Stockholders of Rio Grande Oil Co. have approved a 5 to 1 split in the capital stock of this company. Application will be made to list the temporary certificates on the New York Stock Exchange.

Pennsylvania Oil PLUS

Plus what? — Plus the fact that it is blended from 450 Bright Stock (Sharples Process) refined in ONE Freedom Plant — and from 100% Pennsylvania Crude Neutrals refined in ANOTHER Freedom Plant. Thus, under one supervision, with the one guarantee of a 49 year old refinery, a line of Freedom 100% Pennsylvania Motor Oils is blended to specifications which appeal to discriminating jobbers — a complete line of oils that enable you to build your business and your customers' businesses on repeat order foundations.

For nearly 50 years, The Freedom Oil Works Company has specialized in the refining and blending of 100% Pennsylvania Oils. In one way, that explains why jobbers the country over come to this concern for their requirements.

Deliveries can be made immediately, in tank cars, compartment tank cars, barrels, or drums.

Write for quotations.

Guaranteed
100% PURE
PENNSYLVANIA
OIL

Permit No. 31

Also available for immediate shipment

450 Bright Stock (Sharples Process) which requires less Neutral to blend to the ordinarily required specifications.

100% Pennsylvania Motor Oils, *blended to your own Specifications*, from Freedom 450 Bright Stock and Freedom 100% Pennsylvania Crude Neutrals.

Freedom Quality Stocks
600 Steam Refined
635 Steam Refined
650 Steam Refined

Freedom 300 Mineral Seal Oil made to Railroad Specifications.

Freedom Filtered Burning Oils.

The Freedom Oil Works Company
Freedom, Penna.
Established 1879
Refineries at Freedom and Coraopolis, Pennsylvania

FREEDOM

Pipe Joints Stay Tight

. . . when made up with
G&B Pipe Sealing Compound

Pipe joints made up with G & B Pipe Sealing Compound *stay* tight because it makes a double seal that will not dissolve in gasoline or oil. Be sure that it is used on all tank and pump installations—remember the joints now and you can forget them forever after.

The Compound comes in cans in three sizes: ⅛ pint at 15¢, pint at 75¢, and quart at $1.45.

GILBERT AND BARKER
MANUFACTURING COMPANY
PUMPS AND TANKS FOR THE OIL TRADE
SPRINGFIELD, MASS.

An Ignorant Man

A splendid definition of an ignorant man is "*one who thinks he knows more than he actually does.*"

This hits many of us on some one subject and some of us on many subjects.

Present day conditions and future trends in the oil industry require alert, thoughtful consideration—one should not be too sure.

Major companies are extending and expanding their operations—It is a day of consolidations and mergers.

You may be interested in studying the opportunity this might present to you to sell out to good advantage.

L. V. NICHOLAS

Oil Finance—Investment—Organization

624 South Michigan Avenue
Chicago, Illinois

Booklet "Liquidating and Financing" mailed on request.

Transactions in Oil Shares on New York Stock Exchange

1927 High	1927 Low	1928 High	1928 Low	Listed Capital	Par Value	Stocks	Div. Rate	Last Paid	Transactions Week Ended Dec. 15 Sales	First	High	Low	Last	Change
37⅞	27⅜	43⅛	27⅛	(sh) 922,075	N.P.	Amerada Corp.	50cQ	Oct. 31, 28	13,500	36	39	35¾	37	+ 1¼
82½	35⅛	85	51¼	(sh) 209,180	N.P.	American Republics Corp.	....	....	19,500	60	64¾	56⅛	57¾	— ⅝
50¼	35	53⅛	37½	$56,000,000	$ 25	Associated Oil	50cQ	Sept. 29, 28	195	47⅛	47⅛	46	46	— 1½
....	....	63¼	50	50,000,000	25	Atlantic Refining (New stock)	25cQ	Dec. 15, 28	197,000	53½	57⅞	52	55¼	+ 3½
119	115⅛	118¾	114½	20,000,000	100	do pfd	$1.75Q	Nov. 1, 28	110	117	117½	116¼	116¾	— ½
35½	20¾	53	20	30,971,225	25	Barnsdall Corp. A	50cQ	Oct. 31, 28	89,900	38⅛	41⅞	38	40⅜	+ 2¼
32½	20½	51⅛	20	581,850	25	do B	50cQ	Oct. 31, 28	....	....	....	....	....	....
18¼	14	24½	12¼	946,518	N.P.	Beacon Oil	....	....	29,900	21½	23	21	22	+ ⅜
32⅛	20	36	24	51,524,150	25	California Petroleum	25cQ	Oct. 1, 28	....	....	....	....	....	....
96¾	65	94⅞	68	20,980,400	100	General Asphalt	....	....	10,500	71⅛	74¾	71⅛	72¾	+ 1⅝
144⅞	107¼	141½	110⅛	6,662,200	100	do pfd	$1.25Q	Dec. 1, 28	700	112	115⅞	112	115⅞	+ 2⅞
175⅝	60½	167	79	25,000,000	100	Houston Oil	....	....	56,300	120	121	†79	82	—42
32¾	17⅝	38⅜	21¼	(sh) 659,000	N.P.	Independent Oil & Gas	37½cQ	Oct. 31, 28	24,200	31⅛	32¼	31	31⅜	+ ⅜
12½	7⅜	39⅝	9	$3,582,670	$ 10	Indian Refining	....	Dec. 15, 20	58,100	25⅛	28⅞	25¼	27⅞	+ ⅞
12	7¼	37¼	8¾	4,550,110	10	do ctfs	....	....	25,200	26	28¼	25⅛	26⅜	+ ⅜
112	99	185	40	2,296,400	100	do pfd new	....	Dec. 15, 21	200	140	142	†140	142	—21
37¾	20½	39½	27½	(sh) 3,992,234	N.P.	Lago Oil & Transport	75cQ	Nov. 1, 28	1,600	30¼	32½	30⅛	31½	+ 1
18½	10	19¾	9⅜	(sh) 1,187,003	N.P.	Louisiana Oil Refining	....	....	29,200	14⅛	15½	14	15	— 1
97	85¼	96	78	$4,000,000	$100	do pfd	$1¾Q	Nov. 15, 28	230	89½	90½	89½	89¾	— ¼
22⅜	12	25½	12¼	(sh) 330,000	N.P.	Maracaibo Oil	....	....	7,000	15⅜	19⅜	15¼	17	+ 1¼
58½	31	49¾	33	(sh) 2,316,851	N.P.	Marland Oil Co	....	Mar. 31, 27	55,100	41½	43¼	41½	42	0
320	200	360	250	$45,942,800	$100	Mexican Petroleum	$3Q	Oct. 20, 28	.....	....	....	....	....	.....
....	....	....	....	12,000,000	100	do pfd	$2Q	Oct. 20, 28	....	....	....	....	....	....
9¼	3	73	4⅜	(sh) 995,500	N.P.	Mexican Seaboard	....	Nov. 15, 24	269,700	49	57⅞	47⅞	53½	+ 5½
39⅝	25½	44½	25⅛	(sh) 1,857,461	N.P.	Mid-Continent	....	Aug. 1, 27	72,700	36¾	37¾	35½	35¾	— 1
105	97	115⅛	103¼	$6,718,000	$100	do pfd	$1.75Q	Dec. 1, 28	....	....	....	....	....	....
3¼	1⅜	7⅜	2⅜	24,060,470	10	Middle States	....	July 1, 23	152,500	5⅞	6	3⅝	4⅜	— 1⅜
2¾	1⅜	5⅞	1⅜	5,739,750	10	do ctfs	....	....	30,000	4¾	4¾	2½	3¼	— 1
1⅞	1	2¼	1	(sh) 3,500,000	N.P.	Pacific Oil	....	....	8,700	1⅞	1½	1¼	1¼	— ¼
65⅞	40½	55½	38¼	$50,000,000	$ 50	Pan American P. & T.	....	Oct. 20, 27	4,400	45	49⅜	44½	47½	+ 1½
66⅝	40¼	58⅛	37¾	121,100,000	50	do B	....	Oct. 20, 27	76,100	46⅛	49⅜	45⅛	48	+ 3
37⅛	16¾	28⅜	15½	(sh) 400,000	N.P.	Pan American Western B	....	Jan. 30, 27	2,600	17½	18⅛	17½	18	+ ¾
18⅞	8	21¾	11½	(sh) 199,370	N.P.	Panhandle P. & R.	....	....	2,800	12½	12⅞	12¼	12¼	+ ¼
83	54	106¼	70	$2,935,200	$100	do pfd	....	July 2, 23	100	75	75	75	75	0
60¼	36¼	53⅞	35¼	(sh) 2,406,796	N.P.	Phillips Petroleum	37½cQ	Oct. 1, 28	47,300	44¼	46½	44¼	44¼	+ ⅞
1⅛	½	5⅛	½	$29,622,925	$ 25	Pierce Oil	....	....	14,300	2¾	3	2½	2¾	0
24	13½	50	16¾	15,000,000	100	do pfd	....	Feb. 1, 22	1,800	34	34½	30	30	— 3
5½	2½	6⅝	3½	(sh) 2,500,000	N.P.	Pierce Petroleum	....	....	11,800	5	5⅝	5	5	0
33⅞	16⅝	29⅞	16	$37,450,850	$ 50	Producers & Refiners	....	Sept. 15, 23	4,500	23	26½	23	23	0
50	36¼	49⅝	41	2,845,350	50	do pfd	....	May 1, 25	220	43¼	44¼	43	43	— 1¼
33⅛	25	31¼	19	75,952,250	25	Pure Oil Co	25cQ	Dec. 1, 28	32,900	25¾	27¼	25¾	26⅜	+ ⅝
115½	111¼	119	108	13,000,000	100	do 8% pfd	$2Q	Oct. 1, 28	170	112	112	111	111	— ⅛
28⅜	25¼	56	23½	$43,764,450	$ 25	Richfield Oil	50cQ	Nov. 15, 28	59,100	43⅝	47⅝	42⅞	45	+ 1⅞
54½	44¼	64	44⅜	(sh) 585,293	13.40	Royal Dutch N. Y. shares	$1.879	Aug. 3, 28	2,700	52	53½	52⅞	53½	+ 1⅛
47¼	41⅜	57½	39⅝	(sh) 67,300	£2	Shell Transport & T.	$1.455	July 23, 28	200	55¼	55⅜	55¼	55⅜	— ⅜
31¾	24⅜	39⅜	23¼	(sh) 10,000,000	N.P.	Shell Union Oil	35cQ	Sept. 30, 28	51,100	27	29⅝	26⅞	28	+ 1
26⅝	14¾	27¼	18½	$7,208,080	$ 10	Simms Petroleum	40c	Dec. 15, 28	19,000	21⅝	23	21⅜	22½	+ 1⅜
22⅜	15	46¾	17⅜	(sh) 4,503,031	N.P.	Sinclair Consolidated	....	May 31, 24	430,200	35	39¼	35	37	+ 1½
104½	97	110	102½	$16,310,100	$100	do pfd	$2Q	Nov. 15, 28	200	107¼	109	107¼	109	+ 1
37⅜	24⅛	42⅝	25	27,396,590	25	Skelly Oil Co	50cQ	Dec. 15, 28	13,500	34½	36⅛	34⅜	35⅛	+ 1
60⅜	50⅜	80	53	(sh) 13,016,434	N.P.	S. O. California	‡62½cQ	Dec. 15, 28	64,200	68¾	71⅞	67	70⅞	+ 3⅞
41⅜	35⅛	59⅜	37⅜	$610,195,375	$ 25	S. O. New Jersey	‡25cQ	Dec. 15, 28	151,500	52	54⅛	51	52⅝	+ 2
34⅛	29⅜	42⅛	28⅜	431,973,275	25	S. O. New York	40cQ	Dec. 15, 28	212,000	37¾	39⅜	37½	38⅛	+ 1
34⅞	30	77	31½	(sh) 1,300,532	N.P.	Sun Oil	‡25cQ	Dec. 15, 28	9,000	65	69½	63	65½	+ 2¾
101⅜	99	110	100	$5,000,000	$100	do pfd	$1.50Q	Dec. 1, 28	50	107½	107½	103	107½	+ 2
6½	3⅛	14¼	2⅛	(sh) 1,186,078	N.P.	Superior Oil Corp	....	Dec. 20, 20	84,200	9½	10⅜	9¼	9⅝	0
58	45	74¾	50	$210,577,050	$ 25	The Texas Corp	75cQ	Oct. 1, 28	74,900	63⅝	64½	63½	64⅜	+ ⅝
18¾	12	26⅝	12⅛	8,380,340	10	Texas Pacific Coal & Oil	....	Jan. 3, 28	41,900	18¼	20⅜	17⅝	18	+ ⅛
29⅛	19	41¼	19⅝	(sh) 2,168,498	N.P.	Tide Water Oil Co	20cQ	Sept. 29, 28	6,900	34	36	34	36	+ 3⅛
90¾	85	100⅛	86¾	$20,705,200	$100	do 5½% pfd	$1.25Q	Nov. 15, 28	1,400	97¾	97¾	97	97	— ½
19⅜	15¼	25	14¾	(sh) 4,824,766	N.P.	Tide Water Associated	....	Aug. 1, 27	46,400	20	21½	19¾	19⅞	— ⅛
90¾	85	91¾	81⅞	$72,745,958	$100	do pfd	$1.50Q	Oct. 1, 28	7,200	90	90½	90	90	+ 2⅞
10⅝	3¾	14½	6¾	(sh) 3,842,029	N.P.	Transcontinental Oil	....	....	91,600	10⅛	11	9¾	10⅛	— ⅛
56½	39⅝	58	42¾	$40,841,100	$ 25	Union Oil of California	50cQ	Nov. 10, 28	19,400	49⅜	54½	49⅜	54⅜	+ 5¼
127½	94	128½	110	31,061,200	100	Union Tank Car Co	$1.25Q	Dec. 1, 28	400	119	119	119	119	— 2
34½	24½	44⅞	26	(sh) 357,197	N.P.	Warner Quinlan	50cQ	Oct. 1, 28	16,500	38¼	40¼	38	38⅜	+ ⅞
27½	20	38	20½	(sh) 490,000	N.P.	White Eagle Oil & Refining	50cQ	Oct. 20, 28	10,200	34½	36¼	33⅞	35⅜	+ ⅞
....	....	22⅞	18¾	(sh) 418,967	N.P.	Wilcox Oil & Gas	....	May 10, 28	6,000	20	20	18½	18⅝	— 1⅜

*New High †New Low ††Ex-dividends ‡Also extras s-Stock Total Sales 2,770,775

Pittsburgh Stock Exchange

1927 High	1927 Low	1928 High	1928 Low	Par Value	Stocks	Transactions Week Ended Dec. 14 Sales	First	High	Low	Last	Change
....	....	4	2¼	N.P.	Ark. Nat. Gas (new)	11,726	3⅜	3⅜	3⅜	3½	0
....	....	7¾	6¾	N.P.	do pfd	8,863	7⅝	7¾	7½	7⅝	+ ⅛
98¾	80¾	130	90¾	100	Colombia Gas	100	128½	128½	128½	128½	— 3¾
107⅛	100	124	107	100	do pfd	.....	....	....	....	....	....
15	7⅜	10	6¾	10	Devonian Oil	20	7¼	7¼	7¼	7¼	— ¼
....	....	15	5	10	Dixie Gas & Util.	99	5	5	†5	5	— 4
....	....	95	75	100	do pfd	.....	....	....	....	....	....
117½	115	116	115	100	Duquesne Light pfd.	.....	....	....	....	....	....
....	....	85	80½	100	Fayette County Gas	.....	....	....	....	....	....
12¼	6	22	12	N.P.	Houston Gulf Gas	.....	....	....	....	....	....
59¾	37¼	66	48⅝	$ 25	Lone Star Gas	3,215	64	64⅝	63¼	64½	+ ½
....	....	38	35	25	Petroleum Exploration	.....	....	....	....	....	....
....	....	.75	.45	....	Phoenix Oil pfd	5,400	†.45	*.75	†.45	.75	+†.25
3¼	3	4⅜	3	5	Pittsburgh Oil & Gas	.....	....	....	....	....	....
8	5½	7¼	5½	10	Salt Creek Cons	460	5⅞	6	x5⅞	6	+ ¼
26½	17	22	16½	10	Tidal Osage	.....	....	....	....	....	....
43	33	40	30½	N.P.	Waverly Oil Wks. A	.....	....	....	....	....	....
....	....	19	16	$ 25	Wiser Oil	.....	....	....	....	....	....

*New high record †New low.

Pittsburgh Curb Exchange

1927 High	1927 Low	1928 High	1928 Low	Par Value	Stocks	Transactions Week Ended Dec. 14 Sales	First	High	Low	Last	Change
....	....	....	....	....	Ark. Gas (old)	3,000	10¾	10⅞	10¾	10⅞	+ ⅛
95	88	150¼	120	25	Gulf Oil	.....	....	....	....	....	....
....	....	115	115	....	Houston Gulf Gas pfd.	.....	....	....	....	....	....
10¾	5½	9	4¾	25	Leonard Oil & Dev	200	5¼	5¼	5¼	5¼	— ¼
....	....	9⅞	9⅞	....	Pennkas Oil & Gas	.....	....	....	....	....	....
2¼	1¾	....	....	5	Pittsburgh Oil Dev	.....	....	....	....	....	....
31	19	30¼	16¾	5	Plymouth Oil	1,450	27¾	27⅞	26½	27	— ½
6	5	4¾	4	5	States Oil	.....	....	....	....	....	....
3¼	1½	4½	2¼	1	Texon Oil & Land	.....	....	....	....	....	....
23¾	18	18	15	10	Tidal Osage Non-vgt.	.....	....	....	....	....	....

*New High †New Low x Ex Dividend

Cleveland Stock Market

Dec. 14	Par Value	Bid	Asked
Canfield Oil Co.	100	180	185
do pfd	100	103	....
Fred G. Clark	10	7½	9
National Refining	25	36	37
do pfd	100	x135	....
Paragon Refining Co.	25	22½	23
do pfd	N.P.	43¼	44⅞
do ctf. of deposit	..	19½	22

xEx dividend.

Oil Dividends

	Amount	Stock of Payable	Record
Lone Star Gas q.	50c	Dec. 31	Dec. 19
McColl-Frontenac interim	25c	Jan. 15	Dec. 31
Shaffer Oil pfd. q.	$1.75	Jan. 25	Dec. 31
Washington Oil	$1.50	Dec. 20	Dec. 15

Higher Gasoline Tax Expected in West

CHICAGO, Dec. 15.—Oil men throughout Standard Oil Co. of Indiana territory are holding their political ears to the ground in anticipation of proposed increases in the gasoline tax during the next legislative year. In Minnesota, Wisconsin, Kansas and Indiana, political rumblings already indicate such a legislative move as early as possible.

By a majority of some 9557 votes, the people of Minnesota voted Amendment No. 1, to the state constitution on Nov. 6, which diverts one-third of receipts under the present 2-cent gasoline tax to the state road and bridge fund. This diversion of funds is for the benefit of secondary roads and cripples the state's construction program of trunk highways.

This in itself does not automatically increase the gasoline tax, of course, but C. M. Babcock, state highway commissioner, is preparing the public mind for a legislative campaign to raise the gasoline tax to replace the diverted funds and carry on the highway program. He is going to ask the legislature to make the gasoline tax 4 cents a gallon and oil men believe he will be able to get a 3-cent tax, at least.

The Wisconsin road commissioner has begun to explain to the public that the state is far behind her neighbors in the matter of trunk highways and at the same time is pointing out that Wisconsin can not vote bonds to build roads. It is not because the state is bonded in excess of its legal indebtedness; that is not the case. But according to the Wisconsin constitution, it is a long process to raise money in that way and roads, according to the commissioner, are immediately necessary.

In Kansas, at the recent election, some constitutional amendments were ratified which require the early construction of trunk highways. J. A. Motter, secretary of the Kansas Oil Men's association, writes in his Nov. 30 bulletin that the highway commission is mobilizing its strength to put over a 1-cent increase in the present gasoline tax rate. Like Minnesota and Wisconsin, Kansas has a 2-cent tax rate now.

In Indiana the tax increasing program has not progressed so far, but oil men in Indianapolis are of the opinion that the next legislature will be asked for a higher tax rate and probably will grant it. The Indiana rate is 3 cents now.

TULSA, Dec. 15.—Ray R. Rosier, salesmanager for the Signal Gasoline Co. here, accompanied Mrs. Rosier and their son to Los Angeles this week where they will spend the Christmas holidays. Mrs. Rosier and son will remain in California for several weeks, but Mr. Rosier will return soon after Christmas to Tulsa.

THE OIL INDUSTRY EXCHANGE

Positions Wanted

REFINERY SUPERINTENDENT with years of experience in both operation and construction wishes to make connection with some progressive company. References and history of experience gladly furnished. Address Box 223.

SALESMAN wants a chance to prove ability as a good producer. Willing to go anywhere. Age 26. Address Box 251.

Situations Open

SALESMEN WANTED. One of our clients needs salesmen in midwest territory including Western Penna., Ohio, Indiana, Illinois, Missouri, Iowa, Kansas and a few in Southern and Western States. Men who are now traveling preferred. Those who are selling oil and gasoline could add this line. No samples to carry. Send full particulars covering experience and territory now covered. Anchor Advertising Agency, Third National Building, Dayton, Ohio.

CHEMIST WANTED to test gasoline and lubricating oils and take charge of routine laboratory work for Chicago Oil Jobber. State education, experience, references and age. Address Box 250.

COMMISSION TANK WAGON MAN WANTED to become associated with new company Gary, Indiana. Investment not required but small interest will be given competent man, with right to purchase additional later. Address Box 249.

FIRST CLASS PRODUCTION MAN WANTED

Thoroughly experienced in Ohio, Pennsylvania or West Virginia fields. He must be competent to take entire charge of the field operations of the company which is planning an immediate increase in production from its present proven properties owned in fee.
An attractive basis for compensation will be arranged with the man selected. Letters in reply which will be held strictly confidential should give complete data including age, experience and training.

Address Box 242

YOUNG MAN WANTED, with some experience in lubricating oils and greases, sales department to take care of mail, advertising, sales work, salesmen's records etc. Established company, dealing high grade products. In applying state age, experience etc. fully. Address Box 253.

MEN—INTERESTED SOUTH AMERICAN WORK with large oil, mining companies who pay fare and expenses write for our warranted service offer. South American Service Bureau, 14,600 Alma, Detroit, Mich.

Advertisers having box numbers should be addressed in care of National Petroleum News, 1213 W. 3rd St., Cleveland, Ohio, unless otherwise specified.

Miscellaneous

12 YEARS experience in oil accounting, exclusively. We install systems and make audits. Specialists in analyzing losses common to the oil jobber.

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My office is nothing more than a clearing house for Seller and Buyer of Petroleum Products

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OIL LANDS IN SOUTH AMERICA. Gentleman with sound propositions, large areas close to existing pipelines, wishes to communicate with parties interested. First-class references. Address Box 254.

SALES CONNECTION

An old established Oil Company, Eastern Location, doing a marketing and compounding business, manufacturing their own greases and specialties, desires to make a connection with a wholesale dealer, marketer or exporter as a base of supply for staple and special greases, etc.

Will negotiate a working arrangement of considerable advantage to such a connection or interested party in order that surplus space and manufacturing facilities may be utilized without the necessity of an aggressive open market competition.

This opportunity is well worth investigation by any sales organization with an established outlet of material amount who do not have an exclusive factory connection.

An interview will be arranged and complete details advanced at once to responsible parties. Address Box 252.

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Standard Oil Stocks on New York Curb

1927 High	1927 Low	1928 High	1928 Low	Outstanding Capital	Par Value	Stocks	Div. Rate	Last Paid	Transactions Sales	Week Ended Dec. 15 First	High	Low	Last	Change
21⅝	17⅞	22¾	17	£ 4,126,460	£ 1	Anglo-American Oil	24.4c	June 6, 28	4,200	18⅛	18¼	17⅛	17⅜	— ⅞
21½	17⅝	20½	16⅜	.....	£ 1	do cts. non-voting	.....	.....	400	17½	17⅞	17½	17⅝	+ ⅜
3¾	¾	5	1¼	(sh) 500,000	N.P.	Atlantic Lobos	.....	.....	1,500	2¼	2½	2¼	2½	+ ⅛
6½	2½	9¾	3¼	$ 10,000,000	$ 50	do pfd	.....	.....	.....	.....	.....	.....	.....	.....
69	50	56	44½	1,000,000	25	Borne Scrymser	‡$1S.A.	Oct. 15, 28	.....	.....	.....	.....	.....	.....
60	45	76	58	10,000,000	50	Buckeye Pipe Line	$1Q	Dec. 15, 28	100	65	65	65	65	0
126	76½	161	117¼	3,000,000	25	Chesebrough Mfg	‡$1Q	Sept. 29, 28	400	138½	144	138½	141½	— 3
22⅝	16¼	23	16	36,123,350	10	Continental Oil	.....	Dec. 15, 27	28,000	18	19¾	18	19½	+ 1⅜
137	89	114	69	1,500,000	50	Cumberland Pipe Line	$1Q	Dec. 15, 28	100	74	74	†69	69	— 5
68½	47	88	64⅛	5,000,000	100	Eureka Pipe Line	$1Q	Nov. 1, 28	.....	.....	.....	.....	.....	.....
13½	3½	13	4¼	16,000,000	100	Galena Signal Oil	.....	June 30, 25	.....	.....	.....	.....	.....	.....
59¾	23	87¾	27	4,000,000	100	do new pfd	.....	June 30, 26	.....	.....	.....	.....	.....	.....
60⅛	35½	89¾	35	2,000,000	100	do old pfd	.....	June 30, 26	10	83	83	83	83	0
68½	54	114¾	59¼	73,685,700	25	Humble Oil & Refining	‡30cQ	Oct. 1, 28	22,400	97½	102	96	98	+ 2⅜
182	123¾	290½	176½	20,000,000	100	Illinois Pipe Line	$10S.A.	Dec. 15, 28	450	270	279	270	275	+ 9
64¾	37¾	104	56¾	(sh) 6,591,458	N.P.	Imperial of Canada	‡25cQ	Dec. 1, 28	2,800	85	90	85	88¾	+ 3¾
94½	61	91⅞	74⅞	$ 5,000,000	$ 50	Indiana Pipe Line	‡$1Q	Nov. 15, 28	800	81½	84	81¼	81¼	0
39	28¼	55	35	(sh) 7,123,544	N.P.	International Petroleum	25c	June 30, 28	18,100	46	48⅛	46	47½	+ 1
24	13¼	32⅜	19⅜	6,363,350	12.50	National Transit Co	25cQ	Dec. 15, 28	2,000	20⅞	22¾	22	22	+ ¾
44½	31¾	75	38½	5,000,000	100	New York Transit	.....	July 15, 26	.....	.....	.....	.....	.....	.....
100	70	69	56½	2,000,000	50	Northern Pipe Line	(a)$3S.A.	July 2, 28	50	61	61	61	61	— 5¾
67⅞	52	83½	58	60,000,000	25	Ohio Oil Co	50cQ	Dec. 15, 28	6,200	72½	74⅞	71	71⅞	— ⅝
39	12	84	28	10,000,000	25	Penn Mex. Fuel	$75c	Dec. 16, 28	900	31⅞	32¾	31	31	— 1
55½	45⅜	68	46	60,479,000	25	Prairie Oil & Gas	.....	Aug. 31, 27	21,400	57⅛	59¾	56½	56½	— ½
190	132	278	172	81,000,000	100	Prairie Pipe Line	$3.50Q	Oct. 31, 28	1,600	253	259	243½	243½	— 8½
.....	.....	55¾	51	101,250,000	25	do new	.....	.....	5,400	51¼	51¾	49½	49⅞	0
201½	175½	216	167	4,000,000	100	Solar Refining	$5S.A.	Dec. 20, 28	300	210	215	210	215	+ 5
27¼	15½	35⅞	12	1,000,000	10	Southern Pipe Line	$2	Dec. 1, 27	.....	.....	.....	.....	.....	.....
41½	35	71⅞	36¾	20,000,000	25	South Penn Oil	‡50cQ	Sept. 29, 28	1,800	62¾	67	62½	66½	+ 4
83	55½	100¾	70	3,500,000	100	South West Pa. Pipe Lines	$1Q	Oct. 1, 28	.....	.....	.....	.....	.....	.....
81½	64⅝	95⅞	70⅞	230,788,513	25	S. O. Indiana	‡62½cQ	Dec. 15, 28	31,700	84½	88¾	84½	86¼	+ 3⅛
20⅞	14⅝	27¾	15	8,000,000	25	S. O. Kansas	.....	June 16, 24	1,000	22	22½	21	21	— ⅞
130	111½	179¾	122¼	17,103,011	25	S. O. Kentucky	$1Q	Sept. 29, 28	4,500	167	170	160	162	— 1¾
49½	40	54⅞	39⅞	4,601,100	25	S. O. Nebraska	‡62cQ	Dec. 20, 28	200	49	49½	49	49	— ⅝
87½	72	134	71	14,000,000	25	S. O. Ohio	62½cQ	Oct. 1, 28	1,900	114½	122½	114	117	+ 2
122	117¼	125	116	7,000,000	100	do pfd	$1.75Q	Dec. 1, 28	10	117	117	117	117	— ¼
21	14½	23½	16	861,466	25	Swan Finch Co	30c	June 30, 28	.....	.....	.....	.....	.....	.....
....	....	101¼	72	126,154,100	25	Vacuum Oil	‡75cQ	Dec. 20, 28	6,200	95	95	93	94¼	+ ⅜

Independent Oils on New York Curb

1927 High	1927 Low	1928 High	1928 Low	Par Value	Stocks	Transactions Sales	Week Ended Dec. 15 First	High	Low	Last	Ch'ge
2¼	.55	1½	.65	$ 5	Amer. Con. Oilfields	6,800	70	72	66	66	— 4
7½	2¾	9½	3⅛	N.P.	Amer. Maracaibo	37,900	6⅝	8⅜	6⅝	7¼	+ ¼
2⅝	1	4½	2¼	$ 10	Argo Oil	2,900	3½	3¾	3¼	3¼	— ½
9¾	6¾	10¼	3⅝	10	Arkansas Nat. Gas	1,600	3½	3⅝	3½	3⅝	0
....	....	29⅜	3⅞	....	Barnsdall deb. war	37,800	15⅝	17⅞	15⅜	15¼	— ¾
40	20½	55	29⅞	N.P.	British American	.....	.....	.....	.....	.....	.....
28¼	15½	23¾	3⅞	25c	Carib Syndicate N	14,300	4⅛	4¼	4	4	— ⅛
58¾	40¼	89¾	54	$ 20	Cities Service	1,166	80¼	*89¾	79½	89¾	+10¼
95⅜	87	103½	94½	100	do pfd	1,900	98⅝	99½	98⅝	99¼	+ ¼
8⅞	7⅜	9⅜	8⅞	10	do pfd. B	300	9	9	9	9	0
29¼	22½	....	28¼	10	do banker's shares	.....	.....	.....	.....	.....	.....
3⅞	1⅜	2¼	1	1	Colombia Syndicate	3,800	1⅜	1⅜	1⅜	1¼	+ ⅛
....	....	17¾	9¾	....	Colon Oil	11,400	10¾	13	9¾	13	+ 2½
9¾	6⅜	8⅛	6¼	10	Consolidated Royal	.....	.....	.....	.....	.....	.....
14⅞	9½	17½	10	N.P.	Creole Petroleum	27,900	10	11	10	10¼	+ ⅛
3	.50	3¼	.76	N.P.	Crown Central	4,500	1¾	2	1⅝	1⅞	+ ¾
....	....	15	6¾	....	Crystal Oil	300	12	12	12	12	0
....	....	58	48	....	do pfd	.....	.....	.....	.....	.....	.....
12	4	33¾	8⅛	N.P.	Darby Petroleum	1,000	24	25⅝	23⅞	24⅛	+ ⅛
11½	4	13½	7⅞	....	do trust ctfs	.....	.....	.....	.....	.....	.....
2½	.74	2⅞	1	N.P.	Derby Oil & Refining	.....	.....	.....	.....	.....	.....
16¾	4	21⅜	7½	N.P.	do pfd	200	18	18	18	18	— 2
3¾	1	2	1	N.P.	Gibson Oil	.....	.....	.....	.....	.....	.....
2	.40	.53	.15	N.P.	Gilliland ctfs	.....	.....	.....	.....	.....	.....
118	86¼	165	101¾	$ 25	Gulf Oil Corp	18,800	142⅛	146⅞	141	141¼	— 1⅞
2⅛	.80	3⅜	1	10	Intercontinent Pet	52,400	2	2¼	1⅞	1¼	0
2¼	1⅜	3	1¼	N.P.	Kirby Petroleum	3,800	1½	1⅞	1½	1⅝	— ⅛
10⅞	5⅜	9⅜	5⅜	N.P.	Leonard Oil & Dev	1,800	5½	5⅞	5⅜	5⅞	— ¼
27½	20	43⅜	20	N.P.	Lion Oil & Refg	32,400	32½	34⅞	31⅜	32⅜	— ⅛
59⅜	37	65⅛	48⅛	$ 25	Lone Star Gas	1,500	63¼	64⅞	63	64¾	— 1½
2⅞	.80	1⅞	.50	1	Magdalena Synd	19,800	66	69	60	64	— 4
21½	20⅞	22⅛	22⅛	N.P.	Manhattan Oil	.....	.....	.....	.....	.....	.....
52	12	45	34	N.P.	Margay Oil	100	34	*34	34	34	— 1½
3	1½	40½	40½	$ 10	Mexican-Panuco	.....	.....	.....	.....	.....	.....
12⅛	5	8	2¾	N.P.	Mexico-Ohio Oil	1,200	3¾	4	3¾	3⅞	— ⅛
1⅝	1	1¾	.76	$ 1	Mountain & Gulf	5,000	1⅜	1½	1⅜	1⅜	0
29¼	22¾	28⅜	19½	10	Mountain Producers	10,500	22¼	23⅜	22⅛	22⅜	0
5⅞	4⅜	5⅜	4¼	5	New Bradford	5,700	5⅛	5½	5⅛	5¼	— ⅛
6¼	4	5½	2¾	10	New England Fuel	300	3	3	3	3	0
16	9¼	11⅜	7⅜	1	New Mex. & Ariz	4,300	7¼	7½	7¼	7½	0
13⅞	9	15½	11½	25	New York Oil	.....	.....	.....	.....	.....	.....
....	....	40	39¼	....	North Amer. Oil Cons.	.....	.....	.....	.....	.....	.....
12⅜	9½	13¼	9⅞	N.P.	North Cent. Texas	500	9⅞	9⅞	9⅞	9⅞	— ⅛
9⅜	3¼	6	2¼	N.P.	Pandem	1,500	2½	2⅝	2½	2⅝	0
12⅛	7	15⅝	8½	N.P.	Panapec Oil	8,400	10	10⅝	10	10	— ⅛
9	7⅜	20	10⅝	$ 25	Paragon Refg. B ctfs	.....	.....	.....	.....	.....	.....
.37	.25	9	4	N.P.	Peer Oil Corp	.....	.....	.....	.....	.....	.....
13¼	5⅛	7¾	4⅞	10	Pennok Oil	800	6⅞	7	6⅞	7	+ ⅜
....	....	5⅝	3¼	5	Pittsburgh Oil & Gas	.....	.....	.....	.....	.....	.....
....	....	31⅜	26½	....	Plymouth Oil	5,100	27⅛	27⅜	26½	26½	— ½
24⅜	7	18	8	25	Red Bank Oil	1,500	11⅝	*18	10⅜	17	+ 7
15½	3½	13	4⅛	N.P.	Reiter-Foster	3,900	7	7½	7	7¼	— ⅛
28⅜	15	25½	22	$ 25	Richfield Oil pfd	200	24	24	24	24	— ¼
....	....	23	7½	....	do warrants	.....	.....	.....	.....	.....	.....
7	4½	12	4⅝	N.P.	Ryan Consolidated	1,000	7⅝	8⅝	7⅝	8½	+ ¼
8	5¼	7¼	5⅝	$ 10	Salt Creek Cons.	5,300	5⅞	6¼	5⅞	6⅛	+ ¼
35⅛	27¼	35	23¼	10	Salt Creek Prod	67,700	27½	29½	27	28½	+ ½
7	1¼	3½	1	5	Savoy Oil	.....	.....	.....	.....	.....	.....
....	....	7⅛	5⅞	....	Shell Union Oil	.....	.....	.....	.....	.....	.....
....	....	4⅝	3	1	Texon Oil & Land	21,200	3¼	3¾	3½	3⅛	0
26½	17	22⅞	13	10	Tidal Osage	600	14⅞	15⅝	14⅞	15¾	+ 1¾
23⅜	15	21¼	13¼	10	do non-voting	2,100	14	15	13½	13⅝	0
92	63½	93¾	75	100	Transcontinental pfd	200	85½	85½	84½	84½	— 3
23¼	7	70⅛	18	10	Venezuela-Mexico	600	65	*70⅛	65	70⅛	+ 2⅛
7⅞	4¼	9½	4¾	5	Venezuelan Petrol	15,100	6¾	7	6½	6⅝	— ¼
8	4⅜	8¼	4⅞	$ 1	Woodley Petroleum	700	7½	7⅞	7¼	7¼	+ ⅛
6	1¾	8¾	2⅛	25	Y Oil & Gas (new)	2,100	4⅛	4⅝	3⅝	4⅜	+ ¼

*New High †New Low ‡Ex Di idend

New York Curb Bonds

Week Ending Dec. 14

	High	Low	Last	Ch'ge
Beacon Oil 6s '36	112½	110¼	112½	+ ½
Cities Service 5s '66	93½	92¼	92½	—1¼
Cities Serv. G 5½s '42	93¼	93	93	0
Cities Serv. G. Pipe 6s '43	99	98½	98½	0
Cont. Oil 5½s '37	96½	96	96½	0
Empire O & R 5½s '42	92½	92	92½	+ ½
Galena Oil 7s '30	100⅝	100⅝	100⅝	0
Gulf Oil 5s '37	101¾	100½	100½	—1¼
Indep. Oil 6s '39	108¾	105½	107	+2
Richfield Oil 6s '41	126¼	126¼	126¼	— ¼
Sun Oil 5½s '39	101½	101	101¼	+ ¼

New York Bonds

Week Ending Dec. 14

	High	Low	Last	Ch'ge
Assoc. Oil gold 6s	102¼	102¼	102¼	0
Atlantic Refg. deb. 5s	101	100	100½	+ ½
Barnsdall Corp. 6s	135	129	129½	—1½
Barnsdall Corp. 6s ex-war.	99⅞	98	99¾	+1¾
Cal. Pet. 5s	102	101¼	101½	— ¾
Cal. Pet. 5½s	104	102	102	—2
General Asphalt 6s	107	107	107	0
General Pet. 5s	101¾	101¼	101¼	— ½
Humble Oil & Refg. 5s	101	100	100⅝	+ ⅝
Humble Oil & Refg. 5½s	102	101½	101½	0
Mid. Cont. Pet. 6½s	105¼	105	105	0
Pan Amer. P & T 7s	104½	104½	104⅛	— ⅞
Pan Amer. P & T 6s	97	96	97	+ ¼
Pan Amer. P & T 6s	97	96	97	+ ¼
Pierce Oil deb. 8s	106⅛	105⅛	106⅛	+1¾
Prod. & Refg. 8s	111	111	111	0
Pure Oil 5½s	100½	97	100¼	+ ⅞
Shell Union Oil 5s	98¾	97½	98½	0
Sinclair Con. Oil 7s	103½	102⅜	102½	— ½
Sinclair Con. Oil 6½s	100½	100½	101	0
Sinclair Con. Oil 6s D	99½	99¼	99⅜	+ ¼
Sinclair Con. Oil Crude 5½s	97⅞	97½	97½	0
Sinclair Pipeline	95	94½	95	0
Skelly Oil 5½s	93⅝	93	93½	— ½
S. O. N. Y. 4½s	98	97	97¼	—1
S. O. N. J. 5½s	103	102	102⅝	+ ⅝
Trans. Cont. Oil 6½s	102	101⅛	101½	+ ½
Union Oil of Calif. 6s A	109¼	109	109¼	+ ¼
Union Oil of Calif 1st 5sA	101½	101½	101½	— ⅛
Union Oil of Calif. 5s C	100	100	100	0
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IMPERIAL REFINERIES

Imperial Refining Co. **San Angelo Refining Co.**
Kettle Creek Refining Co. **Wickett Refining Co.**

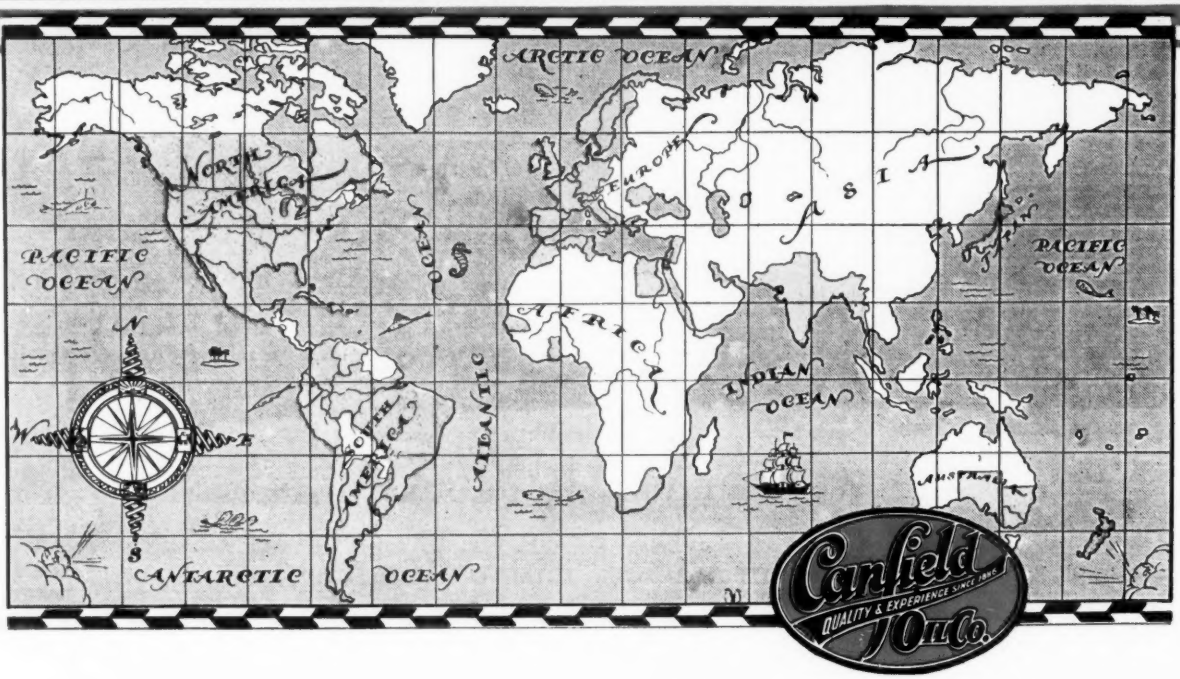
General Offices
TULSA, OKLAHOMA

We are arranging to offer to Independent Jobbers, nationally advertised products from our refineries. Watch for our color standard, trade mark, and trade name in the next issue.

"We Meet Equivalent Competition"

NATIONAL PETROLEUM NEWS—December 26, 1928—Vol. XX—No. 52
Published every week at 1213 W. 3rd St., Cleveland, Ohio. Subscription rate $3.50 per year in U. S., Canada and Mexico—$5 foreign
Entered as second class matter January 17, 1910 at Cleveland, O., post office under act of March 3, 1879, by National Petroleum Publishing Co.

Canfield



CANFIELD is a world-wide institution. Canfield Products are favorably known on every continent in the world. They have the same uniform quality in Sydney as in Stockholm, in Jerusalem and Kobe, in Bombay and Buenos Aires, in Copenhagen and Cairo, Havana and Johannesburg and Madrid. The map above shows the principal foreign countries in which Canfield Products are known and used.

"THE light that shines farthest shines brightest nearest home." While Canfield Lubricants are sold and used all over the world, they are known best of all in good old North America. Jobbers in every state of the Union and all the provinces of Canada are building a bigger business year after year on the Canfield Products listed across the page. Check the list for samples and quotations.

Canfield Products are used in Greece

Canfield Products are used in Argentina

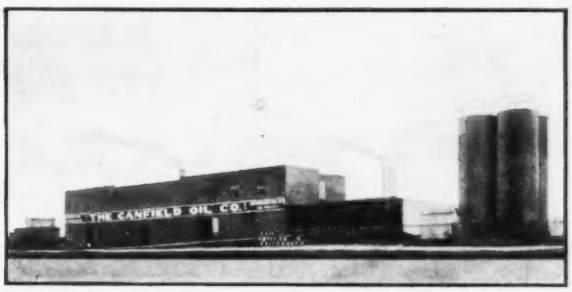
Canfield Products are used in the Balearic Islands

Canfield Products are used in India

Canfield Products are used in the West Indies

A WORLD-WIDE INSTITUTION

BESIDES the export plant shown at the right, three complete Canfield units are at your service. The Coraopolis Refinery, near Pittsburgh, runs 100% Pure Pennsylvania crude by the Sharples process. At Cleveland is "Number One," a grease and compounding plant, and the Cleveland Refinery, specializing in Canfield Filtered Products, made from Mid-continent paraffine base crude.



One glimpse of Canfield's Jersey City Plant, from which Canfield Lubricants are shipped to 50 foreign countries and Canada. "Jersey City" is one of four complete Canfield units.

Serving Jobbers Since 1886 **THE CANFIELD OIL COMPANY** *General Offices:* Cleveland

Refineries: Cleveland, Ohio; Coraopolis, Pa. *Compounding and Grease Plant:* Cleveland

Greater New York Plant: 285 Tonnelle Ave., Jersey City

Tank Cars	Drums		Drums	Barrels	Small Packages	
☐	☐	Premium Motor Oils (100% Penna.)	☐	☐	☐	CANFIELD PRESS-SURE LUBRICANT
☐	☐	Premium Tractor Oils (100% Penna.)	☐	☐	☐	ZERO GEAR LUBRICANT
☐	☐	Canfield Filtered Motor Oils	☐	☐	☐	P. O. C. GEAR LUBRICANT
☐	☐	Mid-Continent Motor Oils	☐	☐	☐	Cup Greases
☐	☐	Mid-Continent Tractor Oils	☐	☐	☐	Crank Pin Grease
☐	☐	Zero Oils	☐	☐	☐	Graphite Grease
☐	☐	Black Oils	☐	☐	☐	Fibre and Sponge Grease
☐	☐	Car Oils	☐	☐	☐	Mine Car Greases
☐	☐	Castor Machinery Oils	☐	☐	☐	Axle Grease
☐	☐	Soluble Oils	☐	☐	☐	Gear Shield
☐	☐	Cutting Oils		☐	☐	Auto Soap
☐	☐	Viscous Neutrals		☐	☐	Petrolatums
☐	☐	Non-Viscous Neutrals			☐	Belt Stick
☐	☐	Red Oils				
☐	☐	Filtered Cylinder Stocks				
☐	☐	Steam Refined Cylinder Stocks				
	☐	Belt Oil				

Name .....

Company .....

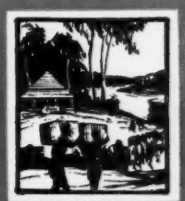
Address .....

City ..... *State* .....

NPN 12-26-28

Canfield Products are used in New Zealand

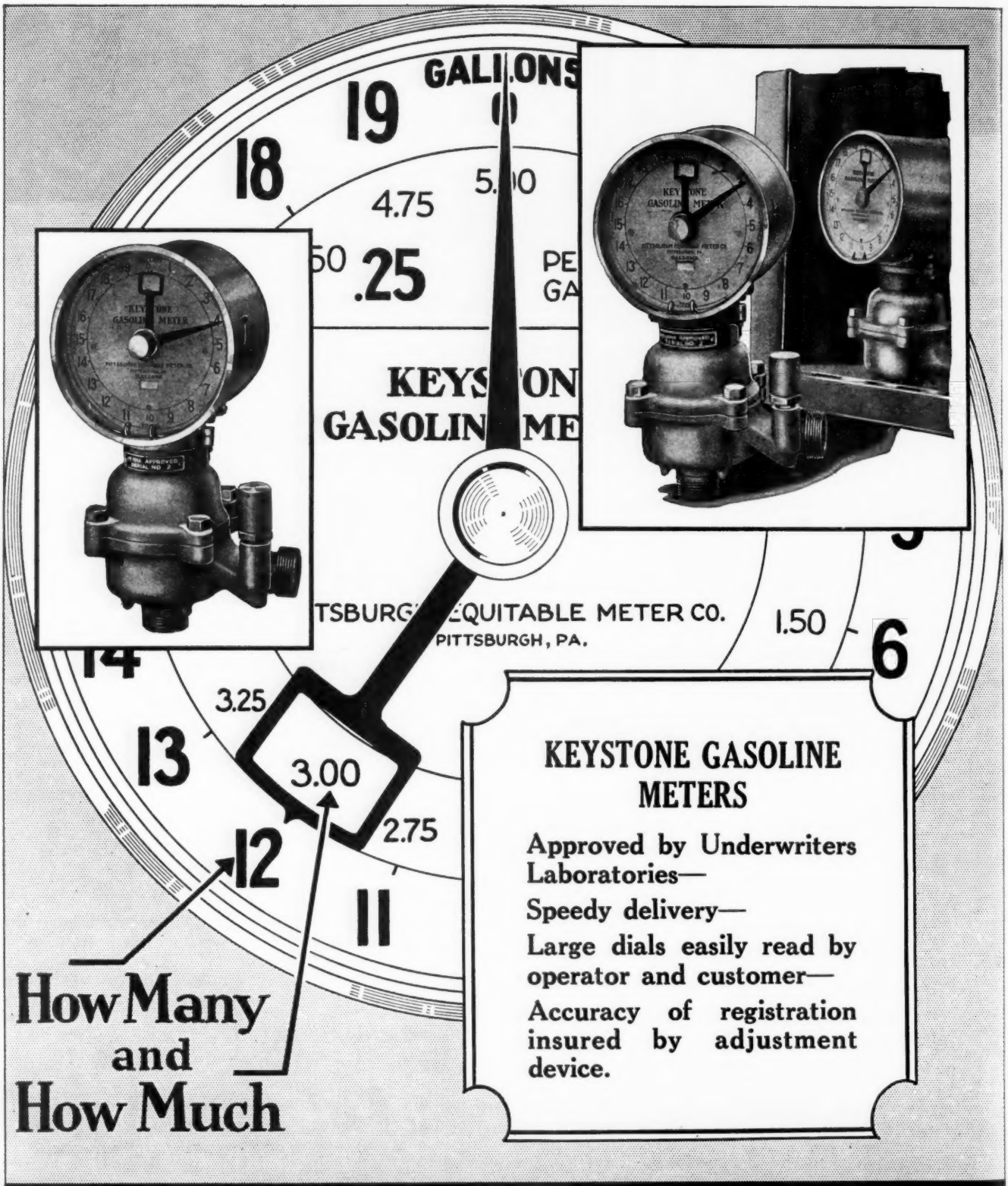
Canfield Products are used in Palestine



Canfield Products are used on the Gold Coast

Canfield Products are used in Switzerland

Canfield Products are used in Tunis



PITTSBURGH EQUITABLE METER COMPANY

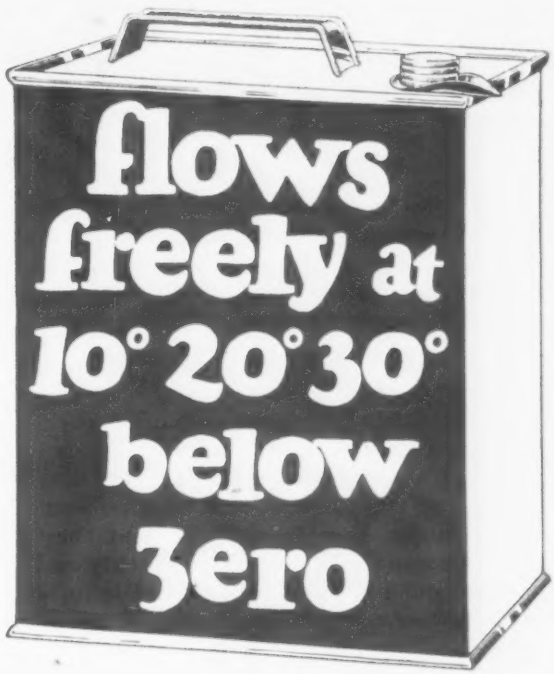
MAIN OFFICE AND WORKS PITTSBURGH, PA.

NEW YORK CHICAGO COLUMBIA, S.C. LOS ANGELES DALLAS
TULSA SEATTLE KANSAS CITY SALT LAKE CITY

For more profits this winter!

This is the only salesman you NEED ~

OAK MOTOR OIL



Summer Service In Winter

Neither Winter Cold nor Summer
Heat can Break the Body of Oak

YOU CAN GET OAK MOTOR OIL HERE

GET an Oak Motor Oil franchise, and display one of these 19x25 posters in a prominent place at each station. Then watch your business grow! Oak is the oil that motorists want, and this sign tells them in no uncertain terms just what Oak will do. They try it—and the results are so satisfactory that you have a loyal Oak customer—always.

This poster is only one of many Oak sales helps that get business for you. Learn about the others now.

FRONTIER MANUFACTURING COMPANY

Manufacturers

North Tonawanda **New York**

speedy pumps bigger profits

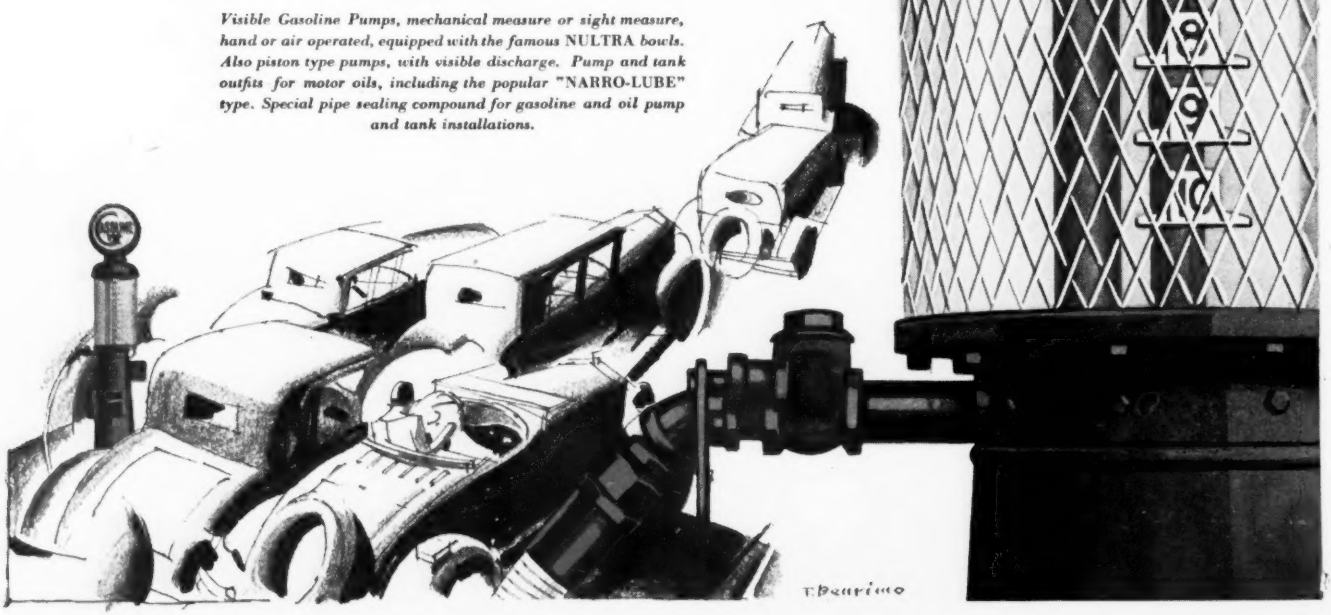
Today speeds along. No one wants to wait — not even for gasoline. A service station must be tuned for speed. Attendants must be on their toes. Pumps must function quickly and accurately. There can be no slowing up of service.

Try your hand at working a Gilbert & Barker visible pump. See for yourself its suitability for your busiest station. Note the exceptional ease of operation — a few strokes of the lever and the bowl is full. Notice its speed of delivery, its unerring accuracy. When the rush is on you'll be glad you have G & B pumps. Day in and day out they answer every demand — do their jobs quickly and reliably. They get all the business that is to be had. For their owners they make bigger profits.

Bulletin T-176 tells about the sight measure nozzle control pump, and Bulletin T-179 shows the mechanical measure model. Write for them today.

GILBERT AND BARKER
MANUFACTURING COMPANY
PUMPS AND TANKS FOR THE OIL TRADE
SPRINGFIELD, MASS.

Visible Gasoline Pumps, mechanical measure or sight measure, hand or air operated, equipped with the famous NULTRA *bowls. Also piston type pumps, with visible discharge. Pump and tank outfits for motor oils, including the popular "NARRO-LUBE" type. Special pipe sealing compound for gasoline and oil pump and tank installations.*



A year-round tonic for the oil business, Positive Lubrication

MOTOR OIL
GOES FARTHER
DEEP-ROCK
LASTS LONGER
GREASE

100% Pure Paraffine Oils

"POSITIVE LUBRICATION"

What makes the public warm up to an oil station in zero weather?

A smooth article will do it, for example, Deep-Rock Prize Motor Oil which, winter or summer, means Positive Lubrication.

Cold weather puts added demands upon engine lubrication. Now is a good time to scrutinize the quality of motor oil. The forward-looking distributor sees the advantage of handling a line of motor oils sponsored by a representative company, recognized and accepted by the public, known to have made good under all kinds of extreme conditions.

Such is the Deep-Rock Line of Prize Motor, Tractor and Airplane Oils, known throughout the middle west and beyond as unexcelled for lubricating value, safety and resistance to crank case dilution. All of which may be summed up in the familiar designation of the Deep-Rock line, Positive Lubrication.

You will find convincing proof of this in the comments and repeat orders of satisfied customers. In addition to lubricants of superior quality, we offer you complete laboratory facilities, plus merchandising co-operation of the highest type. Protected territorial franchise, with exclusive features, still open at a number of desirable points. For details of attractive proposition, write

BYLLESBY
SHAFFER OIL AND REFINING COMPANY
PIONEERS IN PUBLIC SERVICE

EASY STARTING KANT-NOCK REDUCES CARBON GASOLINE

GOES FARTHER DEEP-ROCK LASTS LONGER GASOLINE

SHAFFER
OIL AND REFINING COMPANY

General Sales Offices: 300 West Adams Street, Chicago

District Offices: New York, N. Y. • Fargo, North Dakota • Minneapolis, Minnesota • North Milwaukee, Wisconsin
Des Moines, Iowa • Omaha, Nebraska • Oklahoma City, Oklahoma

Every time the farmer turns the crank—

Every time the farmer turns the crank of his Blackmer gas pump you make a profit. The same is true with oil and kerosene, if you've furnished him with a complete Blackmer home filling station.

The farmer is then his own station attendant. You don't pay him any wages. All you do is keep his tanks filled from your tank wagon. He has his own supplies when and where he wants them. He is better satisfied. So are you when every turn of the crank means a profit!

This "tying up" with the farmer is a simple matter. Sell him the Blackmer equipment—pumps and tanks for gas, kerosene and oil. You make a profit on the sale and you also clinch a *permanent* customer for *your* gas and *your* oil. Our advertising makes this easier. It reaches 1½ million farm homes every month in The Farm Journal. It tells them to see *you* about Blackmer home filling stations.

"Big Brother", for use with barrels or drums. Same sturdy fool-proof pumping unit as in "Big Boy." For handling oils. Or you can buy pump itself, with spout only, and eliminate hose cost.

Does this sound too good to be true? It isn't! Other oil marketers are furnishing farmers with Blackmer

BLACKMER ROTARY PUMPS

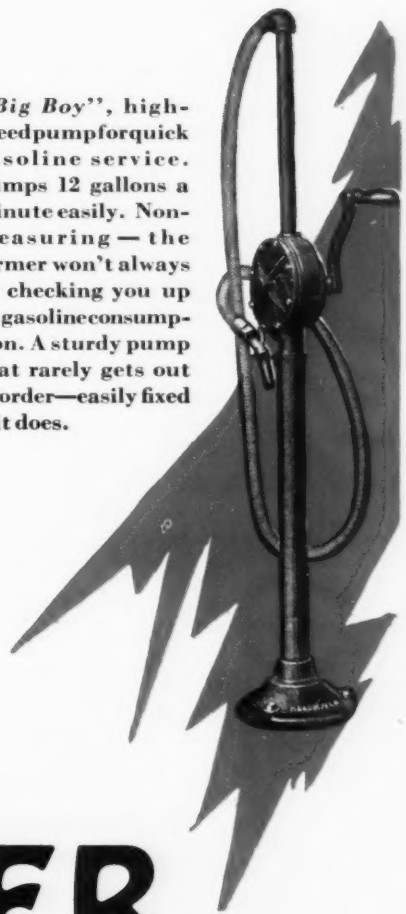
are made of the finest materials available. They are fool-proof. Nothing to get out of order—and self-adjusting for wear. Truly modern, fast, and reliable.

Play-time for the farmer

From December to March the farmer gets a breathing spell. He has his chores to do, of course, but more spare time in which to go places. Granges, parties, benefits, socials, and such things—and he doesn't walk. He uses gasoline—lots of it. *Now* is the time to tie up the farmer with your gas and oil and our home filling station.

equipment and they find it profitable. So will you!

It takes less investment to tie up 300 farmers in this way than to build even a one-pump station in town. And the profits are bigger, more certain, and permanent! Send for our booklet, "Tie Up the Farmer." It gives all the details. Use the coupon today.



"*Big Boy*", high-speed pump for quick gasoline service. Pumps 12 gallons a minute easily. Non-measuring — the farmer won't always be checking you up on gasoline consumption. A sturdy pump that rarely gets out of order—easily fixed if it does.

BLACKMER PUMP COMPANY
1801 Century Avenue
GRAND RAPIDS • MICHIGAN

BLACKMER
Home Filling Stations

And Kerosene

49.6% of all the farms in the United States report the use of oil stoves for cooking and heating. Some of these over 3,150,000 farms use gasoline cook stoves, but the great majority of oil stoves in use on farms today burn kerosene. Farm women, even more than the men, do hate coal oil cans—would eagerly grasp the opportunity to have kerosene handy in a safe underground tank, with easy running Blackmer "Kero-Boy" pump attached. There is great opportunity here because most farm houses use kerosene the year round—in winter for heating, in summer for cooking.

BLACKMER PUMP COMPANY
1801 Century Ave., Grand Rapids, Mich.

Tell us how to get *all* the farmer's gas, oil and kerosene business.

☐ Send your free booklet—"Tie Up the Farmer."

Company.....

Individual.....

Address.....

Did *You* Borrow It?

HOW often have you heard the Boss say: "Who's got my copy of National Petroleum News?" And then you wish you hadn't borrowed it again!

You can have your own copy regularly each week for only $3.50—52 issues. This low price permits every man in the oil industry who wants to study its development and become a better oil man, to have his own copy—at the office or home—to study and think over.

Knowledge and ideas are making profits for all today. And it's *knowledge of the oil industry itself* that is necessary to get profit (or salary increase) from that business.

NATIONAL PETROLEUM NEWS' contribution to your knowledge at the low rate of $3.50 for 52 issues is made possible by its big volume of business. This big volume permits us to furnish you a staff of expert oil writers located at important oil centers, correspondents in outlying fields, and the writings of technical and scientific men on production, refining, natural gasoline and marketing.

So if you did borrow this issue or can use another for your own study at home—avail yourself of this universal rate TODAY!

NATIONAL PETROLEUM NEWS, 755 Penton Bldg., Cleveland, Ohio.

Send the next 52 issues of National Petroleum News to me at the address given below. Enclosed is check (draft or money order) for $3.50. (Foreign $5.00.)

NAME .....

Street or Box ..... Branch engaged in .....

City-State ..... Company .....

The Lincoln Memorial in Washington, D. C. furnishes a fitting background for Heil De Luxe Tankers. Compare the structural beauty of the building with the graceful lines embodied in Heil Quality Truck Tanks—both built for utility, permanency and beauty.

Heil 550 gallon, 4 compartment elliptical fuel oil tank mounted on Service truck.

HEIL Quality TRUCK TANKS
Proclaim Successful Oil Companies

On the tank illustrated above the hose and reel are covered with a housing integral with the tank which materially adds to the good appearance of the unit. Side swing doors allow ready access to the hose reel and controls while the hinged bumper protects the valves from damage by collision.

Many successful oil companies are now using Heil De Luxe Truck Tanks as standard equipment. Heil De Luxe Tankers are traveling the streets and highways everywhere in America and are universally conceded to proclaim the truly successful oil marketers. Notice the beautiful body lines and the long graceful sweep from hood to hose reel box. Heil has built great advertising value into the highest quality and longest lived truck tank on the market. Are your tankers doing this double duty, advertising as well as delivering your products? Let Heil engineers show how it's done. Write for complete information.

1238-50 26th Avenue
MILWAUKEE, WISCONSIN

THE HEIL CO.

Manufacturers of
TANKS, BODIES, HOISTS

The Heil Co. manufactures a complete line of Compartment Truck Tanks, Fuel Oil Tankers with Pump Units, Underground Storage Tanks, Bulk Storage Tanks, Truck Tank Vents and Emergency Valves. Truck Tanks can be mounted and serviced at locations throughout the United States convenient to all oil marketers. Factory Branches are maintained at New York, Philadelphia, Boston, Chicago and Detroit. Distributors everywhere.

AMERICAN AIR SERVICE

THE MARK OF A MODERN STATION

During 1929—more than at any previous time in history—the up-to-date station is destined to GET THE BUSINESS. Competition is keen and all that, you know.....

American Automatic Air Equipment not only is a mark of modernness, but actually acts as a magnet.....draws motorists by the hundreds (especially the balloon tire fellows whose air pressure MUST be uniformly accurate). They help themselves to free air. Result: good will *and* a sale of gas and oil!!

THE AMERICAN
Reel-O-Stat
with QUICK-RITE Inflator
Model T-31 With light fixture and globe lettered "Air"

AMERICAN Automatic Air Equipment
is speedy, too (fastest on market) and convenient for all parties concerned

American
AIR-O-STAT
Accurate Air—Brings Customers There
with QUICK-RITE Inflator
Model T-25

Quality counts! Appreciating this, we see that American Automatic Air Stands come within one pound of the measurements determined by the setting of the dial. All equipment is carefully tested in the factory and is shipped only if it meets this exacting requirement.

JOBBERS! The complete line of American Automatic Air Equipment offers one of the most inviting opportunities of the new year. Tremendous profit-possibilities. On request, we'll be glad to send illustrated bulletin giving you all necessary information.

THE AMERICAN OIL PUMP & TANK CO.

1713 Dalton Street **CINCINNATI, OHIO**

GUARANTEED PROTECTION FOR YOUR CASH

FROM HOLDUPS

That's a strong statement and we are anxious to have you take us up on it. Here's a plan that in use frustrates all attempts at holdup in every one of your Filling Stations. Not only will it frustrate attempts but it will eliminate them, because organized crime has found its efforts futile with this installation.

▲ ▲ ▲

FROM BURGLARY

No longer need you worry about cash left overnight in your stations. This equipment, tested by the Underwriters' Laboratories, has been given a burglary classification that makes it possible for us to guarantee your cash against burglary. Cash left in the Cash Protector is our responsibility, not yours.

▲ ▲ ▲

DURING TRANSIT

Loss of money during its transportation to the bank is a thing of the past with this plan. We collect your cash regularly with armed messengers in armored trucks and guarantee to deliver it to your bank. We take all the responsibility for transportation and make good any loss that might occur.

You cannot afford to overlook this complete protective service. Shall we send you a booklet describing it in detail or send our representative to see you?

Address all correspondence to

DIEBOLD SAFE & LOCK CO., CANTON, OHIO

DIEBOLD-BRINKS TU-KE Cash Protection

The CORRECT-O-METER

WHEREVER traffic centers—the loop—the square—the four corners or the "main stem"—wherever tremendous sales are necessary to cut down high overhead—wherever motorists demand, and appreciate speedy service—the Correct-O-Meter more than serves the purpose.

Whether you require a hand or an electric pump, there is a Correct-O-Meter built to suit your particular needs. The Combination Electric and Hand operated model is priced at $173.00, the Electric at $168.00 and the Hand model at $115.00. All models equipped with double dial and bell ringing attachment. Prices F.O.B. Factory.

Comprising numerous exclusive features, beautiful appearance, speedy service and skilful workmanship, the Correct-O-Meter stands alone in the meter pump field.

Illustrated literature and complete details on the Correct-O-Meter will be mailed free on request.

CORRECT MEASURE

CORRECT MEASURE COMPANY

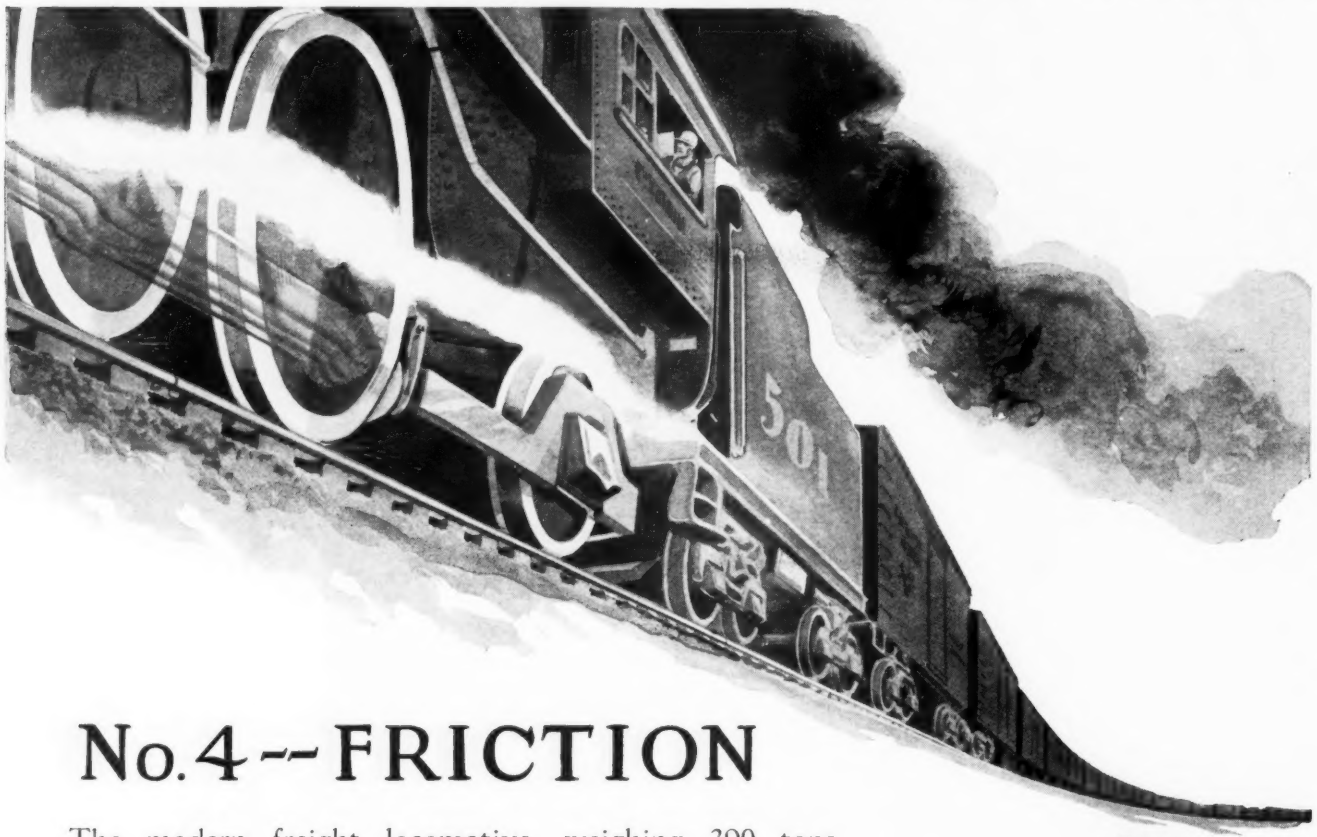
for Busy Stations

ROCHESTER, PA.

The ELECTRIC MODEL

$168.00 F.O.B. FACTORY

THE NATURAL FORCES THAT OPPOSE CORRECT LUBRICATION



No. 4 -- FRICTION

The modern freight locomotive, weighing 390 tons, snorts and screeches its way upgrade with a 9,000-ton train over a mile long. The drivers barely turn—suddenly break loose, spin around and throw fire. But in the main they *grip* the rails, dragging the heavy train up the grade. You are thrilled with the sight and the demonstration of tremendous frictional grip that can exist between smooth steel surfaces.

This same tremendous friction of steel against steel is working destruction in the automobile in every cylinder and bearing where lubrication is imperfect.

IND-O-LUBE Bright Stocks possess the high surface-tension, viscosity, heat resistance and endurance which alone can insure perfect lubrication of automobile cylinders and bearings. These exceptionally fine bright stocks will impart their desirable qualities to your compounded oils. IND-O-LUBES are identified by our hall-mark of quality, "Cream of the Crude". Phone, wire or write for quotations.

SPECIFICATIONS

Gravity	24.5-25
Flash	525-535
Fire	600-610
Viscosity at 210	150-160
Pour	10-15
Carbon Residue	1.5% Max.
Ash	.001% Max.
Reaction	Neutral
R.E.	20 Max.
S.E.	1200 Max.
Color	1 1/2 to 1 1/4 T.R.

INDEPENDENT OIL AND GAS COMPANY

Producers ··· Refiners ··· Marketers

TULSA, OKLAHOMA

Cable Address "Indol"